EVALUATION OF METHODS FOR COLLECTING SOCIO-ECONOMIC DATA ON POST-SECONDARY STUDENTS

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Project Report

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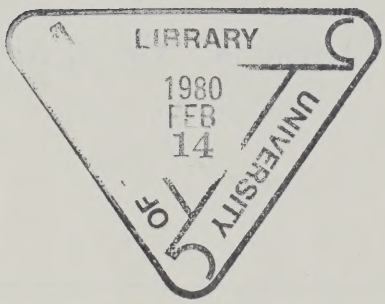
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I

INTRODUCTION AND SUMMARY

A. INTRODUCTION

In the spring of 1978, the Ministry of Colleges and Universities requested proposals to conduct a feasibility study on the collection of socio-economic status data on students. Stevenson & Kellogg submitted a proposal in response to this request which was subsequently accepted by the Ministry. After some revisions to the proposal, the study got under way in the beginning of April 1978.

The Ministry's concern with data on the socio-economic status of students was prompted by a perceived high level of needs and requests for such data. The student information systems do not currently contain this information, but it was seen by many as a useful addition. The Enrolment Committee, which has responsibility for making recommendations on the data elements in these systems, felt it necessary to consider the addition of socio-economic status.

An immediate problem was how to measure socio-economic status. There appeared to be no obvious index which should be used. There was, moreover, considerable dissatisfaction with some of the measures used in studies conducted outside the Ministry. Accordingly, a seminar of experts was arranged to discuss the question. The immediate conclusion was that the problem would not easily be solved. The related questions of how to measure socio-economic status and how to collect the data required a careful study of both the theoretical and practical aspects.

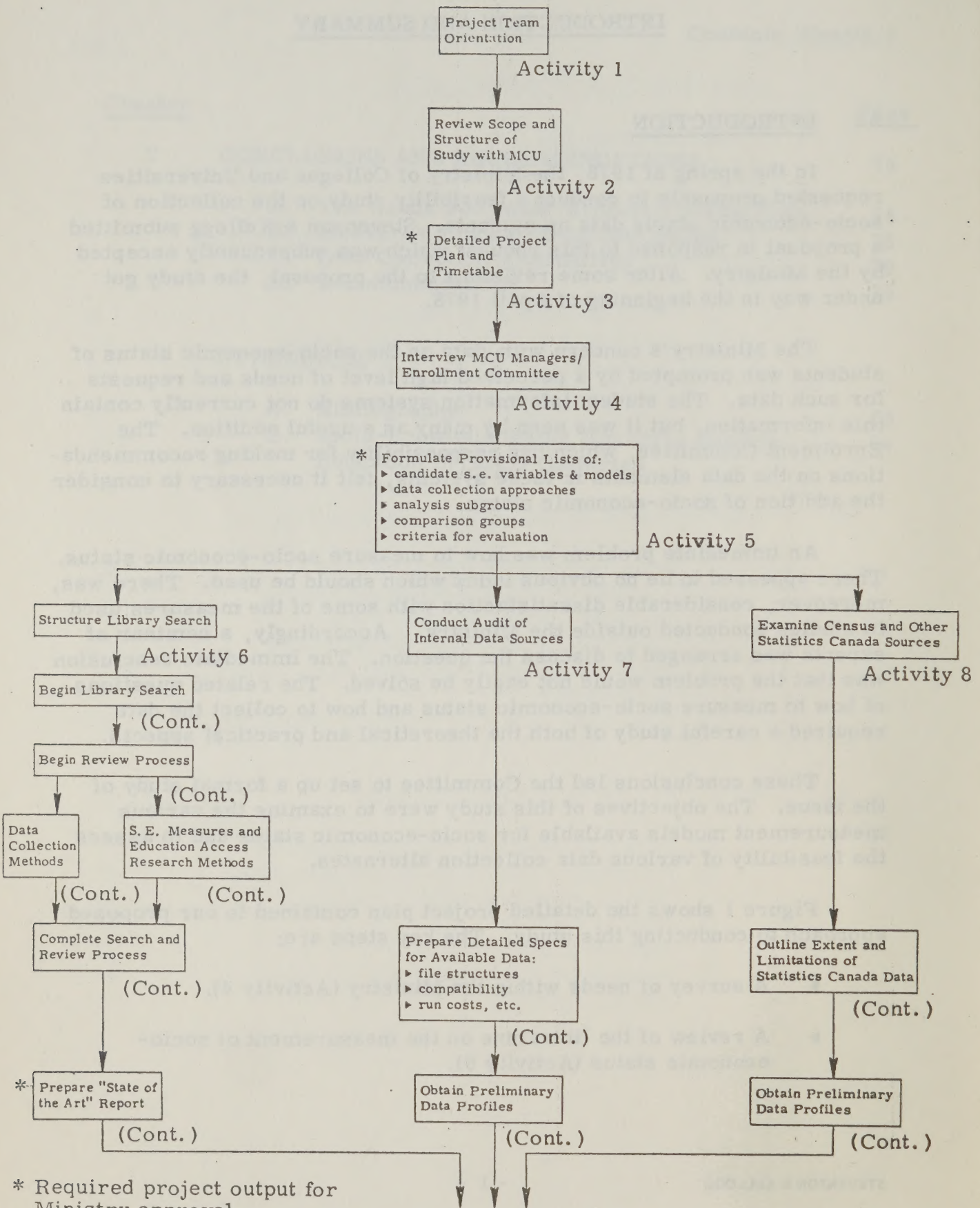
These conclusions led the Committee to set up a formal study of the issue. The objectives of this study were to examine the various measurement models available for socio-economic status and to assess the feasibility of various data collection alternates.

Figure 1 shows the detailed project plan contained in our proposed approach to conducting this study. The key steps are:

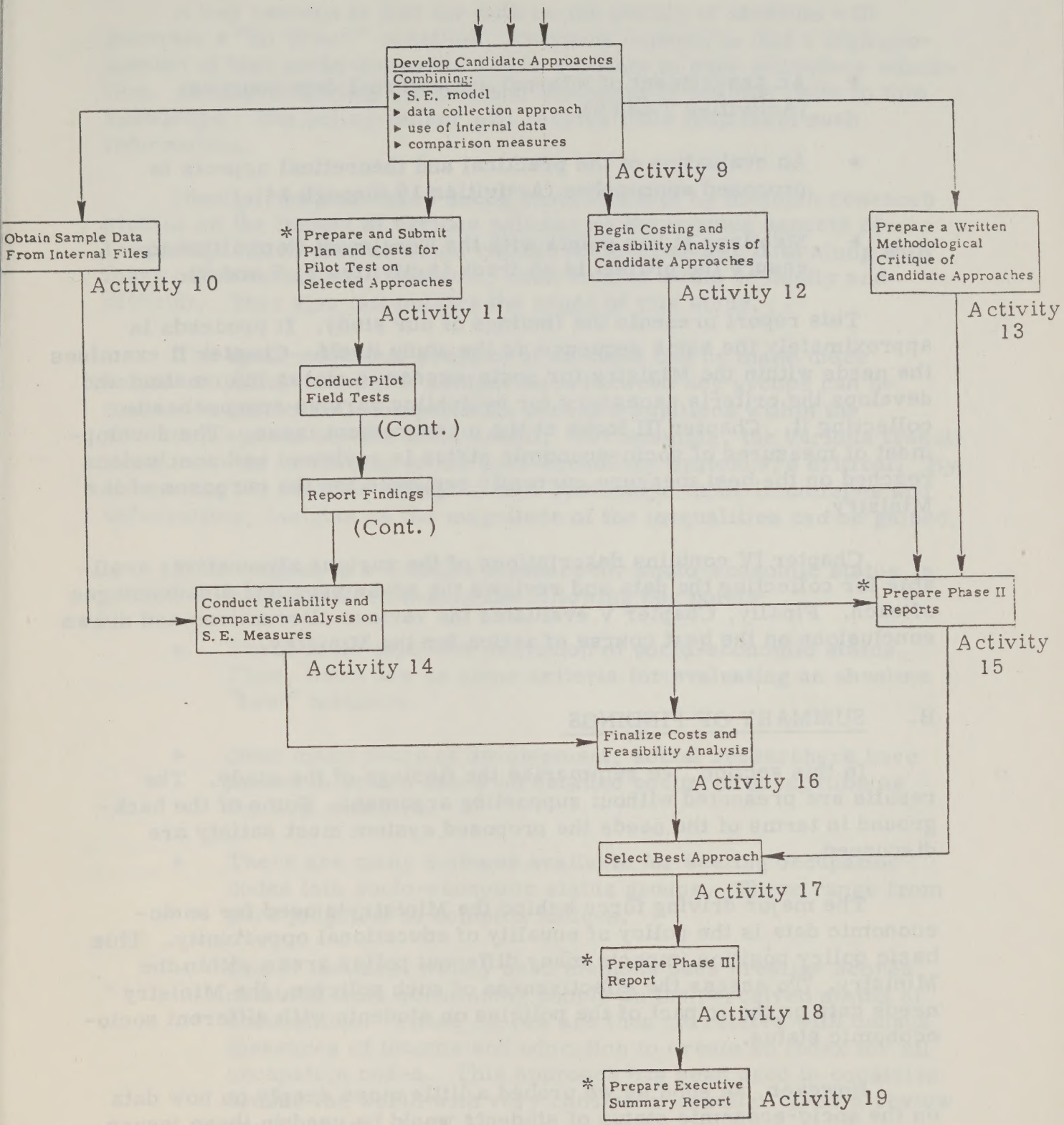
- A survey of needs within the Ministry (Activity 4).
- A review of the literature on the measurement of socio-economic status (Activity 6).

Figure 1

PROJECT PLAN



* Required project output for Ministry approval.



* Required project output for Ministry approval.

- An assessment of internal and external data sources (Activities 7 and 8).

- An evaluation of the practical and theoretical aspects to proposed approaches (Activities 10 through 14).

- Meetings at key points with the Enrolment Committee to ensure the project is on track (Activities 2, 5 and 9).

This report presents the findings of our study. It proceeds in approximately the same sequence as the study itself. Chapter II examines the needs within the Ministry for socio-economic status information and develops the criteria necessary for evaluating various approaches to collecting it. Chapter III looks at the measurement issue. The development of measures of socio-economic status is reviewed and conclusions reached on the best measure currently available for the purposes of the Ministry.

Chapter IV contains descriptions of the various alternatives available for collecting the data and reviews the advantages and disadvantages of each. Finally, Chapter V evaluates the various alternatives and draws conclusions on the best course of action for the Ministry.

B. SUMMARY OF FINDINGS

In this section, we summarize the findings of the study. The results are presented without supporting argument. Some of the background in terms of the needs the proposed system must satisfy are discussed.

The major driving force behind the Ministry's need for socio-economic data is the policy of equality of educational opportunity. This basic policy position impacts many different policy areas within the Ministry. To assess the effectiveness of such policies, the Ministry needs data on the impact of the policies on students with different socio-economic status.

However, as soon as we probed a little more deeply on how data on the socio-economic status of students would be used in these issues, a more complex picture emerged. It soon became apparent that very many factors in the background of the student and in the education system leading up to post-secondary combine to distort the socio-economic status profile of students.

A key concern is that the data on the profile of students will generate a "So What?" reaction. Everyone expects to find a high proportion of high socio-economic status students in post-secondary education. Simply collecting the data and tabulating it will add little to this knowledge. The policy-maker will receive little help from such information.

Ideally, the expressed needs should be met by in-depth research studies on the impact of various policies on the various aspects of inequality. Such studies would collect socio-economic data along with many other variables. However, such studies would be costly and difficult. They also fall outside the scope of this study.

The socio-economic profiles of students can be made more helpful to policy-makers if comparisons between key groups can be made. In particular, comparisons across transitions within the education system are the most useful. For example, the various transitions from the secondary to the post-secondary system are critical. By comparing the profiles of high school students to those in colleges and universities, insights on the magnitude of the inequalities can be gained.

With respect to a suitable measure for socio-economic status, a review of the literature reveals the following key points:

- There is no objective definition of socio-economic status. Thus, there are no clear criteria for evaluating an absolute "best" measure.

- Over many years of development, social researchers have moved to scales based on detailed coding of occupation as the best measure.

- There are many methods available for scaling occupation codes into socio-economic status groups. These range from pure judgment to complex indices.

- One of the most widely used methods uses prestige scores obtained from questioning people on the perceived status of occupations. These scopes are then correlated with census measures of income and education to create an index for all occupation codes. This approach has been used in countries around the world with very consistent results. (For a review see Treiman, 1977.)

- This method has been applied to Canada by Blishen and the Blishen scale has been widely used in social research in this country. It is this scale we recommend for use by the Ministry.

The collection of the data needed to measure socio-economic status of students represents a major problem. Three approaches were identified in this study, namely:

- adding data elements to the existing information systems;
- special surveys of students;
- existing (secondary) sources of data on students.

While the first alternative is very attractive, the key problems are institutional resistance to the addition of a fairly difficult-to-collect data element. In addition, we have serious reservations on the accuracy, completeness and consistency of data collected in this fashion. These problems appear to rule out the approach.

The special surveys approach offers great flexibility in tailoring the approach to the needs. It suffers, however, from very high costs, especially if a high quality approach is taken (personal interviews). On the other hand, serious problems arise with the quality of the data if a low cost approach is used (in-class handout). This approach, therefore, has severe limitations.

For a long period in this study, the use of a secondary source of data appeared to be the best approach. The Labour Force Survey conducted by Statistics Canada seemed to offer a good solution. However, after considerable exploration of this approach, a major methodological problem in terms of the representativeness of the Labour Force sample ruled out the approach.

We are accordingly left with no really good alternatives. Because of the concerns expressed earlier on the potential "So What?" nature of the information, we do not feel that the Ministry should attempt to collect broad, generalized socio-economic data "at any cost". Setting up a complex and/or costly system to collect information which is of only marginal value to policy-makers is not, in our opinion, justified.

We are brought to the conclusion, therefore, that the Ministry should not attempt to collect broad socio-economic data on students. It should, as far as funds allow, attempt to study in-depth the key issues

allied to the equality issue. It should also agree on a measure of socio-economic status to be used in these and other studies. (This report provides the necessary information to do this.) In our opinion, it should not, however, set up an ongoing process to collect socio-economic data on students.

II

THE NEED FOR SOCIO-ECONOMIC DATA WITHIN THE MINISTRY

Before assessing ways to collect socio-economic data, we surveyed the needs for these data within the Ministry. Such a survey is useful, not only to identify the needs, but also to clarify such questions as:

- How accurate does the data have to be? Perfect information is an impossible ideal. High degrees of accuracy can often only be achieved by the expenditure of large amounts of resources. The objective is to reach an optimum balance between the value of information and the cost of obtaining it.

- What populations, or subgroups, must the measures represent?

- What criteria will be applied by users of the information in assessing its utility?

The answers to these questions will lead to useful criteria for evaluating alternative approaches to providing socio-economic data.

The survey of needs was conducted by interviewing individuals from major functional areas within the Ministry. These areas included:

- Policy Planning and Coordination;
- University Affairs;
- College Affairs;
- Industrial Training Branch;
- Council of Regents;
- Information Resources.

These interviews were wide-ranging. The central theme was the role socio-economic information played in the policies and activities of the department. Some background on the function of the department was covered. Individuals were encouraged to talk about their use of other information on students available both from internal systems and other sources. The emphasis was always on the use of data for planning purposes, not its academic value.

Following these interviews, a seminar was arranged. All the people who had been interviewed were invited to attend. At this seminar we presented a synthesis of the needs survey. In other words, we told the participants what we thought they had told us. The ensuing discussion helped to refine and clarify our perceptions of your needs.

This chapter presents the results of this survey of needs. The results are essentially the ones presented (and somewhat revised) at the seminar mentioned above. The first section contains a review of the issues raised by the major groups interviewed and the implications for SES data collection. A framework based on transitions within the education system is then discussed as an aid to understanding the role socio-economic data could play in the Ministry.

The next section describes the sub-groups for whom socio-economic information is needed. Finally, criteria for evaluating approaches to data collection are developed.

A. RESULTS OF THE NEEDS SURVEY

In this section we present the results of the needs survey. For each major group of people interviewed the main issues raised are described. The utility of SES data to these problems as perceived by the people interviewed is then reviewed. Finally we present the major conclusions from the survey and their implications for SES data collection.

1. College Affairs

Three issues emerged repeatedly in talking with people in the College Affairs branch. By far the most important concern expressed was that the colleges are shifting to students of higher academic ability. A second subject of discussion was the mix of programmes offered and its relationship to industry needs. Finally most people expressed interest in geographical variations.

The concern with shifts to academic ability stems from the basic objectives of the colleges. Most people we talked to believe that the colleges are there to provide vocational training to those people who need it regardless of their academic skills. However there is a prevalent impression that the colleges are beginning to filter out the less academically skilled applicants.

It is felt that this trend is based on a number of factors:

- The rapidly growing demand for CAAT places. Many young people (including university graduates) are coming to see that CAAT training may be a better passport to a job in today's marketplace than a general university degree. This means that many more academically skilled young people are applying for CAAT places. (One respondent suggested that over 400 B.A.'s had applied to Seneca for the year 1978/79).

- There is a natural tendency for teachers in colleges to want to teach students who are more skilled at learning. The success rate in terms of the proportion of successful graduates is much higher. The job of teaching is much easier.

- The growing number of applicants for limited numbers of places means that some selection must take place. This increases the possibility that colleges can mold the incoming student profile along the lines they would like.

This trend to more academically skilled entrants could seriously impact the lower SES groups. There is good evidence for a correlation between academic ability and socio-economic status. This may be due to inherited differences, streaming (directly or indirectly) during the primary and secondary education stages, class-bias in the academic ability measures, or many other causes. In a very practical sense, from the point of view of a post-secondary policy-maker, the causes of this correlation are immaterial. The fact remains that admissions procedures which apply academic achievement standards will tend to screen out more low socio-economic applicants.

The utility of SES data on students in this instance would be in trying to assess the magnitude of the problem. However, to determine this magnitude, SES profiles would be needed on both sides of the admissions process. That is, the people we talked to would like to know how the SES profile of people who try to get into CAAT's compares with that of the successful entrants.

From a data collection point of view this would mean collecting SES data on applicants to CAAT's as well as on the CAAT student population. We shall return to this point later when we discuss transitions in the education system.

A second major area of problems raised by people in College Affairs concerns programme mix. In broad terms the questions are concerned with how well the programme mix offered meets the future needs of industry. We were given many examples of the potential pitfalls in this area. Most commonly cited were the problems associated with CAAT programmes in the social work field. These programmes were apparently very popular and lead to a large number of trained graduates chasing very few jobs. The need to control this kind of situation was repeatedly stressed.

It was not very apparent how useful SES data would be in this context. While some suggestion was made that the programme mix might exaggerate problems with disadvantaged social groups, this was not a strongly held view. All in all, the value of SES data in examining this issue would be marginal at best. To the extent it would be useful, provision would have to be made to collect SES data by programme type.

A general need was expressed to be aware of socio-economic differences geographically. In particular the availability of information for each of the college's "markets" was felt to be useful. Utility for these data falls more in the general "nice to know" category than a specific question answering role.

To be useful, SES data would have to be available not only for the college student populations in each area but also for the general population in each area. This would allow the identification of specific anomalies in opportunities to particular geographic regions within the province.

A specific problem raised in the content of geographical variation is that of special programmes. Specialized, limited enrollment, courses tend to be offered in relatively few colleges. This has obvious implications for accessibility. In particular, the problems of transportation, living away from home, etc., might have a differential impact on individuals from low socio-economic backgrounds.

2. University Affairs

One of the major concerns on the subject of social group participation expressed by the university affairs people is to what extent the "die is cast". This stems from a perception that the desire and interest in going to university varies among social groups. In its simplest form the progression is: "father or mother goes to university; therefore, son or daughter goes to university". This sequence may be a major cause of the upscale of SES profile of the university population.

The issue raised is to what extent the social/cultural preconditions are within the control of policy makeup. The concern was expressed to us that the provision of SES data on university students would simply confirm what everyone knows without helping to provide any direction on how to alleviate the situation. Simply collecting SES data on university students without any indication of the complexities imbedded in these profiles might be very misleading.

Some light could be thrown on the situation by examining the SES profiles across the interface with the secondary system. If, for example, SES data were available for Grade 13 students as well as for the university population some conclusions could be drawn on how much of the inequality in SES representation in universities is "passed on" from the secondary system. To what extent is the "die is cast" could be analyzed.

Another area of concern in these discussions was financial. In particular the issue of tuition fee levels was raised. A basic question was whether raising tuition fee levels unfairly penalized students from low socio-economic backgrounds. Alternatively, do low fee levels give people from high SES groups a "free-ride"? This leads into the general issue of whether a policy of low tuition fees leads to more equal participation by SES groups at all levels.

The utility of SES data in answering these questions is problematic. Clearly, simply knowing the proportions of students in each SES group does little to help the policy-maker. However, it is possible that the provision of such data over a number of years might help assess the impact of changes in fee policies. Obviously drawing clear conclusions from looking at changes in SES profiles over time is very difficult.

In general, fee policies would not be the only things changing. Nevertheless, the availability of a time series on the SES profile of university students was felt to be useful in this context.

3. OSAP

Clearly, financial aid policies bear directly on the question of equality of opportunity among social groups. The major question raised in these discussions was how successful OSAP is in helping to achieve greater participation by disadvantaged social groups. Unfortunately, the answer to this question is not a simple one. How much financial barriers are important in reporting participation by low SES groups and how much is simply preconditioned by social/cultural value systems is the critical issue.

SES data would be useful in this context in two ways:

- If it were possible to compare OSAP recipients to non-recipients it would be possible to examine the question of whether financial aid was at least being used by the groups for which it was intended.

- If SES data were available for a suitable comparison group in the general population, some indications would be provided on OSAP success in helping low SES groups get into the system.

While it was recognized in these discussions that drawing conclusions from such comparisons would be hazardous, it was felt that it would provide a starting point for an assessment of OSAP's success.

4. Summary of Major Issues

Major issues raised in our discussions with people within the Ministry can be grouped under five general headings; Pre-Input, Input, Financial, Output, Special Groups. In summary, the issues discussed under each of these headings were:

- Pre-Input: This encompasses concerns on the extent to which inequalities in SES group participation stems from factors having effect before the student reaches the

post-secondary system. These can range from family/ cultural preconditions to concious and unconcious "streaming" in the secondary school system.

- Input: Concern here centres on the admissions process. Are inequalities built up in the admissions process? Particularly for colleges, does a growing use of high academic standards penalize the low SES applicant. In addition, there is also the question of whether the universities and the colleges taken together provide opportunities for all levels.

- Financial: This encompasses the twin components of tuition fees and financial aid. Does this system help low SES groups or give high ones a free (subsidized) ride?

- Output: Questions of programme mix, vocational training, manpower planning were all raised under this heading. Does the post-secondary system provide opportunities for low SES groups to move up to higher levels on coming out of the system, or does it, as one person put it, "help doctors' sons become doctors"?

- Special Groups: Many programmes and policies are aimed at special groups; women, Franco-Ontarians, native peoples, northern residents, etc. There is a need to determine how successful these programmes are, and how they interact with the question of participation by low SES groups.

Under each of these general headings, the needs for SES data vary. In summary, the implications for SES data collection of each of these areas are:

- Pre-Input:

  (a) There is a need for SES data prior to the post-secondary level preferably at multiple points along the process.

  (b) There is a need for studies of the interaction of social/cultural/family value systems and aspirations toward post-secondary education. To what extent is the "die cast"?

- Input:

  (a) SES data is needed on both sides of the input transition. That is,for people outside the system trying to get in, and for successful entrants.

  (b) The interaction of SES and academic ability needs some study to determine the impact of various admissions policies.

- Financial:

  (a) There is a need for a financial "neediness" component in the SES data collected.

  (b) Basic SES profiles for OSAP and non-OSAP students are wanted.

- Output:

  (a) Ideally, the job success of students from varying SES backgrounds should be compared.

  (b) SES profiles by programme type may be useful, although this is not very apparent.

- Special Groups:

  (a) SES profiles are needed for special subgroups such as women, Franco-Ontarians, native peoples, etc.

  (b) SES profiles by geographic region, primarily North versus South are wanted.

In conclusion, the needs for SES data break down in a number of ways. There seems to be two levels of data required; indepth understanding of the role of SES in educational progress and simple "snapshots" of the current situation. Many of the concerns centre on transitions from the secondary system to the post-secondary. And finally there are certain subgroups for which SES profiles are needed. Each of these subjects are now examined in some depth.

B. THE DEPTH OF INFORMATION REQUIRED

Throughout this survey of needs, we constantly come up against the question of the depth of information required. It is clear that there are two levels of questions which policy-makers need answered. The first level is essentially descriptive. It is concerned with the size and location of socio-economic differences. Table 1 illustrates these kinds of questions.

In all of the discussions, there was much concern that answers to these first level questions would not be enough. Many people characterized data of this type as "Gee Whiz". In other words, it will simply tell people what they already know. To be really useful, the second level questions must be answered. These questions can be summarized as:

- What are the causes of these profile differences?
- How do Ministry policies affect this process?

The two levels of questions are answered by dramatically different data collection systems. The first level is handled by obtaining socio-economic data on individuals in various subgroups. This might include, for example:

- university students vs. CAAT students;
- university students vs. high-school students;
- regional breakdowns;
- etc.

The second level questions require full fledged research projects aimed at very specific issues. Such projects are clearly outside of the realm of simple data collection systems.

This leads us to a dilemma. The kind of data collection envisaged in the terms of reference for this study will provide only answers to the first level questions. Yet the needs within the Ministry are for more depth of understanding. There is the definite possibility that data collected to answer first-level questions may be at best regarded by the

Table 1

FIRST LEVEL QUESTIONS

1. WHAT ARE THE SOCIO-ECONOMIC PROFILE DIFFERENCES AFTER TRANSITIONS

2. WHAT ARE THE SOCIO-ECONOMIC DIFFERENCES AMONG PROGRAMS

    - ARTS
    - SCIENCES & TECHNOLOGY
    - ENGINEERING
    - BUSINESS & COMMERCE
    - PROFESSIONAL
    - OTHER POST-GRADUATE
    - APPRENTICESHIP
    - INDUSTRIAL TRAINING

3. WHAT ARE THE SOCIO-ECONOMIC DIFFERENCES AMONG INSTITUTIONS

4. WHAT ARE THE SOCIO-ECONOMIC PROFILE DIFFERENCES ACCORDING TO OSAP FUNDING

5. WHAT ARE THE PATTERNS OF CHANGES IN THE ABOVE AREAS OVER TIME

users as simply telling them what they already knew, and at worst actually misleading because of the complexities involved.

We do not believe that the situation is quite this bad. Simply quantifying the size of the problem will satisfy many needs within the Ministry. It will provide much-needed direction in targetting more in-depth research at the disparities in social profiles. In this way, the simple data collection approach can be seen as a first phase leading eventually to in-depth analysis of specific problem areas.

However, the concerns with a first-level system do lead to two caveats:

- The somewhat limited utility of first-level data implies that the expenditure of large amounts of resources (time and/or money) is not justified.

- The low value of this information on its own provides little incentive to the institutions to spend resources to assist in gathering the information.

The first of these conclusions means that you should consider collecting these data only if it can be obtained at low cost with little effort. The second has implications for the actual data collection process itself. We will return to this problem later when we look at data collection alternatives.

C. A TRANSITIONS FRAMEWORK FOR SOCIO-ECONOMIC INFORMATION

Many of the concerns with equality of opportunity relate to what takes place when students make a transition from one part of the system to another. This is most clearly demonstrated at the various points where students enter the post-secondary system. It is here that policies on admissions, fee levels, financial aid, etc., can affect the probability that students from low socio-economic groups will come into the system.

There is considerable research to suggest that socio-economic differences are created at those transitions where selectivity is greatest. Husen (Husen, 1975) notes:

"As long as admission to a certain type of education is generous in terms of the proportion admitted from those who apply and the attrition rate during a given stage is low, and as long as education is available to all free of charge, socio-economic background plays a somewhat less prominent role. But as soon as a competitive selection takes place, either on admission or in terms of grade-repeating and drop-out during the course, then the correlation between background and indicators of performance increases considerably."

There is therefore some benefit in looking at transitions in the education system as a basis for structuring the needs for socio-economic data. Figure 2 shows flows with the Ontario education system. This figure is designed to highlight those transitions which are most relevant to the equality issue. For this reason, grades 12 and 13 are shown separately. By comparing, for example, the socio-economic profiles of grade 13 and university students, a better insight into the inequalities specific to the universities admissions approach can be obtained. This kind of comparison is more fruitful than simply comparing universities to the general population.

Table 2 lists the transitions shown in the figure. These have been grouped into broad groupings which relate to specific aspects of policy. The first group is actually outside of the Ministry's field. The second is probably the most critical to the equality issue -- the input of students. The remaining groups cover transitions within the system, dropout from the system before successful completion, and the final output of graduates. Table 3 relates specific policy areas to each of these groupings.

D. SUBGROUP REQUIREMENTS

In addition to the need for collecting socio-economic data for the populations discussed in the previous section, there is a need to further break down the data by subgroups within these. In particular, there are needs within the Ministry relating to breakdowns by:

- program;
- full/part-time;
- economic region;
- financial aid status;
- sex.

Figure 2

EDUCATIONAL FLOW CHART

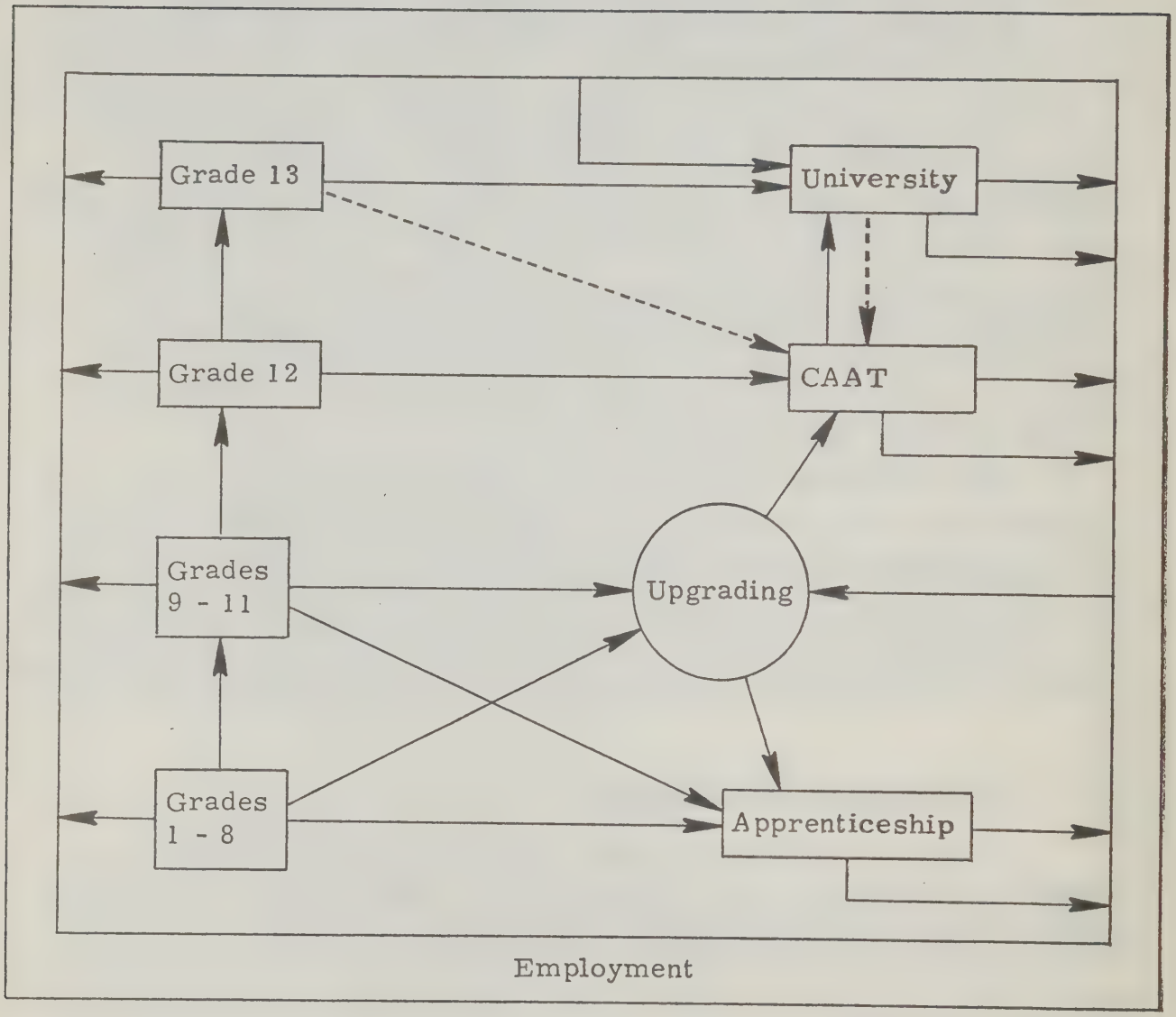


Table 2

TRANSITIONS WITHIN THE EDUCATION SYSTEM

	From	To	
1.	Grades 1 - 8	Grades 9 - 11	Elementary and secondary
2.	Grades 9 - 11	Grade 12	
3.	Grade 12	Grade 13	
4.	Grades 1 - 8	Employment	
5.	Grades 9 - 11	Employment	
6.	Grade 12	Employment	
7.	Grade 13	Employment	
8.	Grades 1 - 8	Upgrading	Input to post-secondary
9.	Grades 9 - 11	Upgrading	
10.	Grades 1 - 8	Apprenticeship	
11.	Grades 9 - 11	Apprenticeship	
12.	Employment	Upgrading	
13.	Grade 12	CAAT	
14.	Grade 13	University	
15.	Grade 13	CAAT	
16.	Employment	University	
17.	Upgrading	Apprenticeship	Cycling within post-secondary
18.	Upgrading	CAAT	
19.	CAAT	University	
20.	University	CAAT	
21.	University (dropout)	Employment	Post-secondary dropout
22.	CAAT (dropout)	Employment	
23.	Apprenticeship (dropout)	Employment	
24.	University	Employment	Post-secondary output
25.	CAAT	Employment	
26.	Apprenticeship	Employment	

Table 3

POLICY ISSUES

ELEMENTARY AND SECONDARY

- MINISTRY OF EDUCATION
- INTERFACE STUDY
- COMMUNICATIONS POLICIES

INPUT TO POST SECONDARY

- RESPONSIBILITIES SPLIT AMONG INSTITUTIONS
- FUNDING SPLIT
- ADMISSIONS POLICIES
- FINANCIAL AID
- FEE LEVELS
- GEOGRAPHIC LOCATION
- PROGRAM MIX
- CMTP FUNDS ALLOCATION
- EMPLOYER/APPRENTICE/MCU ROLES

CYCLING WITHIN POST SECONDARY

- TRANSFER POLICIES
- RESPONSIBILITIES SPLIT
- FUNDING LEVELS FOR UPGRADING

POST-SECONDARY DROP-OUT

- FINANCIAL AID
- FUNDING FORMULAE
- TRANSFER POLICIES
- PROGRAM CONTENT
- FULL/PART TIME MIX

POST-SECONDARY OUTPUT

- ECONOMIC VS SOCIAL GOALS
- MANPOWER PLANNING
- PROGRAM RESTRICTIONS, APPROVALS
- VOCATIONAL TRAINING VS LIBERAL EDUCATION

E. CRITERIA FOR EVALUATION

The major criteria for evaluating ways of collecting socio-economic status data is that the data should cover the subgroups described in the two previous sections. That is, information should be available for those areas which have a bearing on policy. At a minimum the data should cover students within the two types of institution and relevant comparison groups (grades 12 and 13). This would allow at least a gross assessment of the size of disparities.

As far as possible, the data should be capable of being broken down by the subgroups described in section D.

Apart from coverage there are three other criteria which the data collection approach should meet, namely:

- Comparability. As far as possible, the data collected should be broadly comparable to that collected in other studies of the equality of education issue. This will increase the utility of the data.

- Acceptability. The measure used should be broadly acceptable as a valid measure of socio-economic status. As far as possible, you want to avoid debates on whether the data collected is valid.

- Expense. The method used should not utilize excessive amounts of resources. The relatively low value of the information for its own sake indicates this.

III

MEASURES OF SOCIO-ECONOMIC STATUS

In this chapter, we present a review of the state of the art in the measurement of socio-economic status. The objective of this review is to provide direction for the development of a system for collecting socio-economic status data on students in post-secondary education in Ontario. From this review, we will identify the variables which should be used in measuring socio-economic status, the way the variables should be measured and grouped into classes, and the data collection approaches which should be used to collect these measures.

The source for this analysis is primarily a wide-ranging review of the literature (see Appendix A for list of publications reviewed). This review has encompassed publications from all parts of the world. The search has proceeded along two paths, namely:

- social research methodology;
- education research.

In the former group, we have examined the development of various ways of measuring socio-economic status. We have identified a number of scales which have been developed in Canada, the United States, and in the rest of the world. We have reviewed methodological criticism and discussion of these various scales.

In the field of education research, we have identified studies which have collected socio-economic status information. The prime target of this search has been for studies of the post-secondary student population in Ontario. However, we have considered studies which encompassed slightly different populations, either in terms of the level of education or in terms of the geographic area.

The discussion in this chapter proceeds from the theoretical to the practical and from the general to the specific. We begin by discussing the question of what is socio-economic status, and the related question of what do socio-economic status measures measure. We then proceed to discuss the major theoretical issues and discussions taking place with regard to socio-economic status. After presenting a number of criteria for evaluating socio-economic status measures, we describe the major

scales in use in the western world and evaluate them on our criteria. In the following section, this is contrasted with the measurement of socio-economic status in higher education research, both here and internationally. Finally, we present our conclusions on the type of scale most relevant to the problem at hand.

A. WHAT IS SOCIO-ECONOMIC STATUS?

1. Theoretical Definitions are Lacking

The major problem facing any researcher wishing to decide upon a way of measuring socio-economic status, is that there is very little agreement on what socio-economic status really is. Clearly, the logical approach to developing a measure is to first define that which we wish to measure. In this way, the validity of any measurement scale can be evaluated on a rational basis. In many fields, this definition process is almost a trivial one since there is virtually universal agreement on what it is we are talking about. This is not the case for socio-economic status.

Although social class pervades much of sociological theory, no one has developed a theory of social class which leads to a useful operational definition. Most reviewers mention the theories of Marx and Weber. Marx took the position that class membership results from the relationship to the means of production. Weber distinguished between class, status and political affiliation. While both of these theories are used widely in discussion of social systems, neither of them has led to a useful, operational definition of socio-economic status.

Most writers recognize the multi-dimensional nature of socio economic status. The major dimensions identified include:

- economic or class;
- prestige or status;
- power or dominance;
- culture or taste.

Many authors (e.g. Haug, 1972) feel that a "good" socio-economic status scale would measure these dimensions independently. Individuals would then be classified into appropriate categories. This would lead to a clearer understanding of the social forces at work in a specific situation.

In practice, this is not the case. Most scales developed confound the various dimensions. For example, the Duncan & Blishen scales (Duncan, 1961; Blishen, 1967) use income (an economic variable) with education (a cultural variable) to predict occupational prestige scores (a status variable).

For most data analysis, this is acceptable. A single dimension which contains elements of class, status, culture, etc., corresponds to most people's conception of socio-economic status. The fine distinctions which are perhaps critical to the sociologist, can be safely ignored by the researcher who wants to cross tabulate some data by socio-economic status.

A number of other issues cloud the discussion of what is socio-economic status. The major issues include:

- Is socio-economic status a continuous variable or a categorical variable? That is, do people simply vary along a spectrum of socio-economic status and, therefore, any split of the spectrum into discreet categories is somewhat arbitrary. Or, are there clearly defined classes or categories which may or may not be capable of being put into some ordered relationship?

- Is socio-economic status a variable which can be defined in terms of some objective measures, or is class only defined in terms of relationship to other members of society. As an example of the latter interpretation, Hollingshead (Hollingshead, 1957) in a study of a small community, defined the class of respondents in terms of where other people in the community placed that particular family.

With considerable disagreement among the experts on how to define socio-economic status, we must turn to the various measures which have been used.

2. In Practice, the Measure Has Defined the Concept

Faced with this lack of a theoretical basis, many researchers have essentially been forced to define socio-economic status to be that which they measured. Researchers could not afford to wait for a resolution of the theoretical definition of socio-economic status. It is clearly a variable which is important to the analysis of many problems. Therefore, they have taken whatever measures seemed to have face validity and to be appropriate to the problem at hand and used them. This fact accounts for the plethora of measures which one finds in the literature.

The measures used by researchers split into two groupings:

- "Basic" variables;
- "Compound" scales.

By "basic" variables we mean variables which are directly observable and are presumed to correlate with the underlying dimension of socio-economic status. Variables such as income, education and occupation are most commonly used in this context. Such variables are used in their original form to represent socio-economic status.

Examples of "basic" variables include:

- Income. Many researchers have used various definitions of income for socio-economic status groupings. Significant problems, in terms of non-response and accuracy, are commonly encountered.
- Education. Education has primarily been used as an adjunct to other measures of socio-economic status, particularly occupation. One of the problems with education as a measure of socio-economic status is that it contains a distinct age-related bias. Higher education, until very recently, was the domain of a very small minority. In fact, in many countries secondary education was limited to a relatively small proportion of the population. The use of education as a status variable would eliminate a number of very senior people in the community simply because they are "self-made men".

- Occupation. This is the most frequently used variable. Commonly, researchers have used a basic split between manual and non-manual jobs or "blue collar" and "white collar" occupations. Other more sophisticated groupings and scalings of occupation are described later in this review.

- Appearance variables. Some researchers have made use of variables such as the type of house, the type of neighbourhood, even the style of livingroom decoration. Commonly, these variables have been used by interviewers in survey research to position respondents on some word scale using some very soft criteria for the positioning.

- Standing in the community. As mentioned above, Hollingshead utilized the positioning of respondents by other members of the community as his socio-economic status measure. This approach has primarily been restricted to community research projects.

- Cultural activities. Many researchers have used indicators of "taste" as a socio-economic status measure. This has included such things as the kinds of newspapers being read, the frequency of visits to the theatre and so on.

"Compound" scales on the other hand go one step further in trying to measure socio-economic status. These scales manipulate the results from one or more "basic" variables to arrive at a scale which is felt to represent more closely socio-economic status. The manipulation of results may be nothing more than a simple grouping of responses into categories which the researcher believes will capture variations in socio-economic status. Or, the manipulation may involve the statistical development of scales using surveys, census data, etc.

For the researcher wishing to measure socio-economic status these scales probably represent the best starting point. They come closer to measuring SES than the "basic" variables mentioned above. Most of these scales have stood the test of time. They have been used in many studies for many purposes. They have been the subject of methodological scrutiny. Their properties and limitations are reasonably

well known (although, regretfully, there has been little experimental comparison of alternative scales). While none are perfect, they represent a much better starting point than attempting to develop a completely new measure.

But, in looking at the various methods researchers have used to generate these scales, we should not lose sight of the fact that they all start with basic variables. No matter how sophisticated the technique, a scale is still subject to the limitations of its components. Accordingly, before looking at the scales in detail we will examine the strengths and weaknesses of the key basic variables which are used in their construction.

3. Income, Education and Occupation as Measures of Socio-Economic Status

In this section we discuss three basic variables; income, education and occupation. These three are the most commonly used. They also form a basis for many of the SES scales used.

The discussion of each will be in two parts. First, we discuss the variable as a measure of SES status. Second, we look at problems of measuring each variable.

(a) Income as a Measure of SES

Income clearly has face validity as a measure of the economic element of SES. It also used to be a fairly good measure of status. People who were fairly high on the social status ladder generally earned more. This latter relationship is now becoming blurred.

The blurring of the relationship between income and SES stems from a number of causes including:

- Growing number of working wives such that family income is increased -- a relatively high income group may contain households from relatively high SES groups with one wage earner as well as households from lower SES groups with two wage earners.

- The growing strength of unions has narrowed considerably the gap between blue-collar and white-collar workers. And among these blue-collar workers, it is not necessarily the highly skilled group of blue-collar workers that have benefited more.

While these kind of anomolies make income a relatively poor measure of SES, it could still be argued that it is a good measure of "ability to pay". It is fairly clear that for some of the issues of concern to the Ministry, ability to pay is a key dimension.

(b) Problems in Measuring Income

The major problems in measuring income are partially definitional problems and partially response problems. These problems include:

- Definitional -- unit of analysis. From the point of view of assessing financial policies with respect to ability to pay, household or family income is probably most appropriate. As a measure of SES the income of the chief wage earner is perhaps more suitable. Also, most data collection schemes centre on employment income. But, at least for the higher groups, there is some relevance in considering asset income.

- Response problems -- knowledge. For the Ministry's needs the data must be collected via the student. The probability that students do not have a good estimate of their father's or their household's income is fairly high.

  Also, there is overstatement bias -- a natural tendency to overstate income to heighten one's perceived status. Given their poor knowledge levels, students are likely to guess high rather than low (unless of course they feel the reason for collecting the data is too assess an increase in fees). Whatever the case, there is a bias of unknown size and direction in the responses.

Finally, there is the problem of refusal. Income is a subject which is regarded by most people as private information. There is therefore a tendency to refuse to answer income questions even when the responses are highly aggregated. In many surveys refusal rates on the income question are in excess of 20%. Such high refusal rates lead to difficulties in analyzing the data obtained.

- Income Inflation. Inflation in income levels is of particular concern to data collection schemes which will operate over an extended time period. The groupings of income used in the question must be constantly adjusted upward. Comparisons of one year's data with another are very difficult to make. Even if some adjustment is made for the overall level of inflation, it is extremely difficult to adjust for different inflation rates among various segments of the population.

With these kinds of problems it is clear why income is viewed by social researchers as one of the more difficult types of information to collect in a reliable and valid manner.

(c) Education as a Measure of SES

The education level of a student's father (or mother, or both) appears to be a particularly attractive measure of SES for students. Not surprisingly, parents' education is highly correlated with that of their offspring. However, there are some problems. The major ones are:

- Age bias -- Widespread higher education is a fairly recent phenomenon. This is important for students when we are interested in their parents' education.

- "Self-made man" -- People who have been very successful without an advanced education will be underrated on an education scale.

Measurement problems with education again include both definitional and response problems. The major problems are:

- Years of education which is often used as a measure. Clearly not all years are equivalent.

- Variation in educational qualifications by province and country.

- Knowledge. The students will frequently not be aware to any level of detail of the educational backgrounds of their parents.

- Which parent to use. There is some evidence that the highest level of education reached by either parent is the best variable.

However, these problems are not unsurmountable. Simple questions can be designed which will probe educational backgrounds and which can provide useful insights, depending upon the accuracy needed.

B. CRITERIA FOR THE EVALUATION OF SOCIO-ECONOMIC STATUS SCALES

To evaluate socio-economic status scales on a rational basis we need criteria which relate to the particular uses the scale would be used for. Reviews and methodological critiques of scales used in social research suggest a number of relevant criteria. For the purposes of this study we will propose to use the following four criteria:

- Validity;

- Reliability;

- Scaleability;

- Comparability.

We describe each of these in greater detail below.

1. Validity

In theory, this criterion require that the measure understudy should actually measure what it purports to do. We have already seen that there is little agreement on what socio-

economic status really is. We are forced, therefore, to infer the validity of the scale on a face value basis only; that is, that the scale appears to measure SES dimensions on a common sense basis.

We have already noted the multi-dimensional nature of socio-economic status. Of the dimensions noted, a number are important from the point of view of the Ministry in this study. These dimensions are:

- Economic. In the present context, the economic dimension of socio-economic status relates to the ability of students to finance their continuing enrollment in higher education.

- Cultural. This aspect of socio-economic status relates to the family attitudes towards further education. As such, a socio-economic status scale which measures the cultural dimension will reflect differences in educational participation which are a function of attitude and not just opportunity.

- Prestige. In this particular problem the prestige associated with a social class relates to the public perceptions of the performance of the education system on the issue of equality. People in a high prestige class are viewed by the general public as "the have's". To the extent that a disproportionately large proportion of the post-secondary population comes from this group, the system will be viewed by the public as being unequal.

With these faults in mind, therefore, part of the evaluation of any particular scale will consist of determining, on at least a face value basis, which of these three elements are captured by the scale.

2. Reliability

By this we refer to the consistency of the scale. The classic measure of reliability would be to apply this scale to the same population at two different points in time and measure the consistency with which the scale placed the same people into the same categories or gave them the same scale value.

There is virtually no published data on the reliability of socio-economic status scales. The evaluation of scales will therefore rely upon judgement as to the reliability of the variables which go to make up the scale. If the input variables to the scale, for example, occupation, are reliable, that is the same question elicits the same response each time, and the method of forming the scale is applied consistently, then we would deduce that the scale itself is reliable.

3. Scaleability

There are two elements to this. First, does the scale place an individual uniquely at a point on the scale. And, if the scale is used to place people in different categories, do the categories make sense and can they be used in analysis?

In most cases the first part to this question is automatically answered in the affirmative since in most scales the procedure for scaling an individual is unambiguous. However, the second element of scaleability, that is, how reasonable are the classes or categories used, is open to more debate.

4. Comparability

From a practical point of view the scale used should be broadly comparable to scales used in other research with which the data might be compared. In this case, a number of potential comparisons may be made. The most important of these are:

- Canadian census data;
- Other educational research data on the status of students;
- Other social research on social inequality.

With these criteria established, we now turn to a description and evaluation of the major socio-economic status scales in use today.

C. MAJOR SOCIO-ECONOMIC STATUS SCALES

In this section, we will describe and compare the major types of socio-economic status scale in use today. We have identified seven scales which are commonly used in Canada and around the world. The

exception to this rule is that we have included Treiman's scale. This scale has been included because it summarizes the results of a large number of previous prestige studies, and therefore, has considerable support. The seven scales are described in Table 4.

In reducing the number of scales for consideration to the seven discussed below, we have of course, eliminated a number of socio-economic status scales. Scales have been eliminated for one or another of the following reasons:

- The scale has been used only rarely or its use has declined.
- The scale has been developed primarily for use in social research community studies and is therefore not relevant to our problem.
- The scale requires data input which is not amenable to the normal data collection procedures.

Three types of scales are in common use today. All of them use occupation as the basic measure of socio-economic status. The three ways of organizing occupations into a scale are illustrated in Table 5.

The first kind of scale, the prestige scale, utilizes the public perception of the "general standing in the community" or status associated with occupation titles. This data is generally collected utilizing survey techniques. The average score across the entire population for any single occupation is used as that occupation's prestige rating.

Socio-economic indices essentially take the prestige ratings of occupation one step further. Prestige rating studies of necessity must restrict the number of titles they ask people to rate. The rates titles represent only a small fraction of all of the possible occupation titles in the population (some 16,000 occupation titles are listed in Canada). The socio-economic indices utilize the fact that there is a strong correlation between the education and income levels for specific occupation groups and the prestige rating for those occupation groups. Regression equations are formed which predict fairly accurately the prestige rating for an occupation. These equations can then be used to calculate a "prestige score" for all of the occupations for which census data is collected. These scores then, after suitable transformation, become the socio-economic index.

Table 4

MAJOR SOCIO-ECONOMIC SCALES

	"Prestige Scales"			"Socio-Economic Indices"		"Judgement"	
	Pineo/ Porter	N.O.R.C.	Treiman	Blishen	Duncan	Hollingshead	Registrar General
1. Variables based on:							
▸ Directly	Occupation	Occupation	Occupation	Occupation	Occupation	Occupation Education	Occupation Employment Status
▸ Indirectly				Education Income	Education Income		
2. Method	Prestige rating National sample 204 titles	Prestige rating National sample 200 titles	Comparative analysis of 85 prestige studies	Regression of prestige scores on education & occupation	Regression of prestige scores on education & occupation	- Grouping of occupation into 7 levels on a judgement basis - 7 education groupings - summed scale	16 groups defined in terms of general occupation level and employment status
3. Geographic	Canada	United States	International	Canada	United States	United States	United Kingdom
4. Source references	Pineo, 1961 and 1976	Hodge 1964 Seigel 1971	Treiman 1977	Blishen 1967 & 1976	Duncan 1961	Hollingshead 1957	General Register Office 1970

Table 5

MAJOR TYPES OF S.E.S. SCALES

Scale	Method
Prestige	Sample of people rates occupation titles on "general standing in the community".
Socio-Economic Indices	Prestige scores for occupation titles are regressed on income and education values for the occupation, using census data.
Judgemental	Occupation groupings along with other parameters (e.g. education) are formed heuristically into classes on the basis of experience, "common sense", and expert judgment

The final type of socio-economic status scale is essentially a "catch all" grouping. We have labelled the group "judgemental" since in most of these scales, the organization of occupations and any other information used is based primarily on judgement. It must be noted that in some cases data is collected to support the groupings made. This, however, is generally the exception.

We will now describe the development and construction of each of the three types of scales we described above.

1. Occupational Prestige Scales

In 1947, the National Opinion Research Centre in the United States published the results of a national survey of the prestige ratings for 90 occupational titles (NORC, 1947). The results were based on the responses of a national sample (sample size = 2920) to questions on the general standing of the jobs included in the list. Responses were categorized on a five-point scale, ranging from excellent to poor. By taking mean scores across the entire population for each of the occupation titles, a prestige ordering of the 90 titles was obtained. This ordering ranged from a high of 96 (out of a possible 100) for "a Supreme Court Justice" to a low of 33 for "shoeshine boys".

The prestige ratings given to these occupations have proven remarkably consistent. A replication of the 1947 study conducted by NORC in 1963 showed a .99 correlation between the two sets of results (Hodge, 1966).

The prestige scores have been used in many studies as the basis for a socio-economic status scale. The approach has been to group occupations into a number of categories, based on judgement as well as examination of the prestige scores for occupation titles included in the categories. The total number of categories selected is dependent on the dictates of the particular study being undertaken. The scale value for each category is then the average prestige score for all of the occupation titles included in the category. It should be noted that not all of the occupations in a category would have been rated on the prestige rating. The score is, therefore, based only on those titles which were included in the prestige study.

In 1965, Pineo and Porter replicated the NORC study in Canada. In this study, a national sample of 793 people rated 204 occupation titles on a nine-point scale. The occupation titles used were chosen primarily to match the titles used in the 1963 expanded version of the NORC study.

As expected from the previous research, there was a high correlation between the results of the Canadian and U.S. studies. However, there were substantial differences in the average level of prestige accorded to specific occupation titles. These differences were not, however, large enough to invalidate the statement that the prestige ratings are substantially the same as in the U.S.

To form a socio-economic status scale, Pineo and Porter computed the average prestige scores for occupation titles in the major groupings of the 1961 census. This analysis showed very poor results. Many of the groupings were almost identical in terms of average prestige score. Others were highly heterogeneous indicated by the large variance in the prestige scores for titles within the grouping. On the basis of this analysis, Pineo and Porter formed their own socio-economic groupings which formed a more acceptable scale in terms of prestige scores. They updated this analysis in 1976, utilizing the 1971 census data. The scores for the major groups of the census are shown in Table 6. It can be seen that the major census groups still do not form a good socio-economic status scale. As an alternative, Pineo and Porter suggested grouping the Unit Groups of the census into 16 categories. These categories, along with the mean prestige scores, are shown in Table 7. It can be seen that these categories form a more acceptable scale. There is reasonable separation between the various categories and, with the exception of the middle management category, they are relatively homogeneous.

In the main, the categories suggested correspond to a common sense view of the order relationship between occupations. At the top of the list there are the self-employed professional occupations. At the bottom, there are the farm labourers and unskilled manual occupations. Of interest is the split of the clerical and sales categories and the crafts and trades categories into three skill levels. This split is affected

because the old categorization into two groups which was formed primarily on the basis of manual/non-manual occupations, shows a large overlap between the two. This reflects the reality of the present-day occupational structure. A skilled technician is considerably higher on the prestige ladder than a low level clerical worker.

The final word, for the moment, in the development of occupational prestige scales, comes from Treiman (Treiman, 1977). Based on the highly consistent results of prestige studies conducted in various places and at various points in time, Treiman hypothesized that the prestige structure of occupations is consistent across all societies.

To test this hypothesis, he collected data from 85 separate occupation prestige studies in 60 different societies. Making due allowance for differences in occupational terminology, he was able to demonstrate a very high correlation between the prestige rankings in different societies. Based on this result, he proceeded to form an international prestice occupational scale. The scale was based on the ISCO (International Standard Classification of Occupations) occupational groups. Treiman's scale is shown in Table 8.

A review of the methodological critiques of prestige scales suggests a number of pros and cons for prestige scales. The major pros for occupational prestige scales are:

- The scales are highly consistent in the ordering of occupations.

- Studies have shown that the prestige ratings are strongly correlated with both income and education (for example, see Blishen, 1958 and Siegel, 1971). On this and other evidence, Featherman has argued that prestige scales are primarily socio-economic in nature as opposed to simply representing status perceptions (Featherman, 1975).

- The ordering of occupations corresponds to a common sense perception and therefore is intuitively acceptable to the majority of readers.

- The categorization of occupations which is used to form a scale has face validity as a measure of socio-economic status.

Table 6

PRESTIGE SCORES FOR 1971
CENSUS MAJOR OCCUPATION GROUPS

	Name of Major Group	No. of Titles	Mean Score	Standard deviation
11	Managerial, administrative	19	66.9	13.9
21	Natural sciences, engineering, mathematics	13	67.4	8.0
23	Social sciences and related fields	9	63.8	13.4
25	Religious occupations	2	70.3	3.5
27	Teaching and related occupations	4	63.0	17.8
31	Medicine and health	8	66.4	14.5
33	Artistic, literary, recreational	15	54.2	8.1
41	Clerical	18	38.7	7.4
51	Sales	16	40.5	12.5
61	Service	20	34.8	15.3
71	Farming, horticultural, animal husbandry	6	35.0	10.0
73	Fishing, hunting, trapping, and related occupations	2	23.5	0.1
75	Forestry and logging occupations	3	27.9	11.2
77	Mining, quarring, including oil and gas field occupations	4	33.5	8.3
81/82	Processing	8	31.3	5.2
83	Machining and related occupations	6	37.9	8.9
85	Fabricating, assembling, repairing	9	40.9	8.4
87	Construction	11	36.3	9.4
91	Transport equipment operating	10	41.1	13.6
93	Materials handling	5	26.8	9.7
95	Other crafts and equipment operating	5	38.4	4.4

Source: Pineo, 1976.

Table 7

PINEO/PORTER'S SOCIO-ECONOMIC CATEGORIES

	Socio-economic category	No. of Matched Titles	Mean Prestige Score	Standard Deviation
01	Self-employed professionals	4	78.6	8.7
02	Employed professionals	23	68.0	8.2
03	High-level management	6	67.7	5.6
04	Semi-professionals	23	56.7	8.6
05	Technicians	2	67.2	0.4
06	Middle management	14	64.8	16.7
07	Supervisors	8	46.3	8.4
08	Foremen	2	51.0	0.1
09	Skilled clerical-sales-service	10	47.7	5.6
10	Skilled crafts and trades	26	40.3	7.0
12	Semi-skilled clerical-sales-service	20	34.2	8.9
13	Semi-skilled manual	25	32.4	7.0
14	Unskilled clerical-sales-service	6	29.7	8.9
15	Unskilled manual	18	24.7	6.0
16	Farm labourers	2	23.3	2.6
11	Farmers	4	40.9	5.3

Source: Pineo, 1976.

Table 8

TREIMAN'S STANDARD INTERNATIONAL CLASSIFICATION OF OCCUPATIONS

Occupation Category and Prestige Cutting Point	Prestige	
	Mean	S.D.
1 High prestige professional and technical occupations (≥58)	68.4	6.8
2 Administrative and managerial occupations	67.1	11.8
3 High prestige clerical and related occupations (≥41)	50.3	7.4
4 High prestige sales occupations (≥40)	49.1	5.0
5 Low prestige professional and technical occupations (<58)	48.9	8.6
6 High prestige agricultural occupations (≥34)	44.3	8.6
7 High prestige production and related occupations (≥38)	43.6	4.8
8 High prestige service occupations (≥27)	40.8	10.4
9 Medium prestige production and related occupations (26-37)	32.1	2.9
10 Low prestige clerical and related occupations (<41)	31.6	5.6
11 Low prestige sales occupations (<40)	28.1	11.0
12 Low prestige agricultural occupations (<34)	22.3	9.1
13 Low prestige service occupations (<27)	19.7	5.1
14 Low prestige production and related occupations (<26)	19.6	4.9
Total	43.2	16.8

Source: Treiman, 1977.

The criticisms of prestige scales centre upon:

- The meaning of the scales. Many authors (for example, Goldthorpe, 1974 and Haug, 1972) have questioned what it is prestige studies actually measure. Goldthorpe has argued that these studies actually measure the general desirability of occupations and is therefore not necessarily related to socio-economic status.

- The coverage of occupation titles. Not all census titles can be included in an occupational prestige rating task. Duncan (Duncan, 1961) suggests that in fact this could never be done because of the low awareness of most of the population for many occupational titles. Because of the necessarily limited coverage of occupations, the scales used must aggregate many occupations into broad general groupings. The unrated occupations are therefore placed on the scale purely on the basis of the judgement of the researchers.

- People tend to rate occupations they do not know very well purely on the basis of the sound of the title. Pineo and Porter, in their Canadian study, included two fake occupation titles. Both titles had relatively high sounding technical names. A significant proportion of the sample (56% and 70%) actually rated these fake titles. And they rated them relatively highly. This raises some questions on the validity of the rating task.

Notwithstanding these criticisms, occupational prestige scales have become probably the most common basis on which to base socio-economic status scales. We will now turn to specific scales which attempt to counteract at least some of the drawbacks of purely prestige scales.

2. Socio-Economic Indices

Two drawbacks of prestige scales have led researchers to develop more sophisticated indices based upon them. The two drawbacks, one of them mentioned above, are:

- not all census occupation codes are covered by prestige studies;

- the scale values associated with prestige scales are not metric values; that is, in theory at least, the values simply suggest an order relationship but the distance between different occupational categories has no substantive meaning.

In 1961, Duncan published a scale which was designed to overcome these difficulties. His approach was to form a regression equation between the prestige score for an occupation and the census data on the education and income levels for that occupation. Specifically, he used as the criterion variable the percentage of excellent and good responses for the occupation titles in the NORC study. Income was represented as the percentage of males in that occupation with incomes of $3,500 per year or more. Education, correspondingly, was the percentage of males in the occupation who were high school graduates or better. This analysis was performed for only 45 of the 90 NORC occupations, since these were the only titles which matched the census categories.

Duncan was able to demonstrate a close fit between the predicted and the actual prestige scores for those occupations. On this basis, therefore, he computed the predicted value of the prestige score for all of the occupations in the U.S. census.

This technique enabled the researcher to collect occupation data at the same level of detail as the census and transform it into a numerical value using Duncan's roster of scale values. For many purposes, this numerical value could be treated as a metric variable. This has proved extremely useful where the researcher wishes to conduct complex analyses such as regression or path analysis, utilizing occupation as one of his variables.

In Canada in 1958, Blishen had published a socio-economic index based on a somewhat similar approach. In this first Blishen scale, occupation titles from the 1951 Canadian census were ranked on the basis of the average education and income level for people in those occupations. This initial scale did not include prestige ratings. However, Blishen did note a high correlation between his scale and the NORC prestige scores (quoted in Pineo, 1967).

Accordingly, Blishen's 1967 update of his scale using 1961 census data followed essentially the same approach as Duncan. Blishen utilized the prestige ratings obtained in the Pineo/Porter study described above. Blishen's most recent update of the scale (Blishen, 1976) utilized 1971 census data and again, Pineo and Porter's 1965 prestige study.

The regression equations obtained by Duncan and Blishen are shown in Table 9. Two points should be noted in looking at these equations. Firstly, the high level of the R^2 suggests a good close relationship between income and education on the one hand and prestige ratings on the other. The second point to note is that the income and education variables are weighted into the index in roughly equal proportions.

Although the socio-economic indices can be used in their raw form, for many uses it is necessary to categorize responses into different socio-economic status categories. For his scale, Blishen suggests that the scale be cut into six categories, using the "tens" digit of the scale (which runs from 0 to 100).

On this basis, the top category becomes 70+ and the bottom below 30. This approach categorizes occupations roughly as follows:

- Class I contains mostly professional occupations.
- Class II is mainly managerial occupations.
- Class III includes lower level managerial, lower paid professional, advertising, salesmen, stenographers, etc.
- Class IV is primarily skilled workers.
- Class V contains mostly semi-skilled occupations.
- Class VI contains mostly unskilled occupations.

Where even greater level of aggregation is required, Blishen suggests collapsing the categories in groups of two down to three levels which he describes as High, Medium, and Low socio-economic status.

Table 9

REGRESSION FITS OF PRESTIGE SCORES
TO CENSUS INCOME AND EDUCATION DATA

Scale	Equation	R^2
Duncan	SEI = .59I + .55E - 6.0	
Blishen (1961)	SEI = .21I + .34E + 24.5	.83
Blishen (1971)	SEI = .30I + .37E + 12.3	.84

Notes:

SEI = Prestige score or socio-economic index

I = Income

E = Education

Many of the methodological criticisms and also support for occupational prestige scales can also be applied to socio-economic indices. In addition, a number of significant advantages to the scales can be cited, namely:

- All occupations are scaled by the methodology.
- The scale matches closely to census data and therefore data produced by it can be compared to national averages.
- The scale produces metric data which can be used in regression models (see, for example, Duncan 1972).

Critics of the scale (for example, Haug, 1972) cite two key objections, namely:

- The scale is based only on occupation data for the male labour force. This means that occupation titles such as nurses, for example, are ranked on the basis of the earnings and education of male nurses only. Many researchers recently (for example Haug, 1973 and Guppy, 1977) have noted that the significant growth in the female labour force needs to be taken account of in measures of the occupational structure of the economy. [1]
- Another criticism of these indices is the method by which the scales are broken into distinct categories. In many ways, the distinctions are arbitrary and the categories do not necessarily correspond to intuitively understandable groupings of occupations. Setting the cut-off value between two categories at a specific number can also lead to some strange separations of occupations that are, in fact, within a few decimal points of each other on either side of the cut-off barrier.

3. Judgement Scales

Very early in the development of social research, researchers began to use socio-economic status scales to stratify the population. As far back as 1888, the Registrar General in the U.K. categorized the population into an eight-category social class measure. This was based partially on occupations, but also on employment status. This grouping was later collapsed

[1] Blishen has recently published a scale specifically developed for females.

to five classes in 1921 and, in fact, with slight modification, these classes have been used consistently in British statistics to this day, as Registrar General's scale.

In the United States, Edwards (Edwards, 1938) produced a socio-economic grouping of occupations which later formed the basis for the groupings used in the U.S. census.

All of these occupational groupings were made primarily on the basis of the judgement of the researcher. The perceptions of the researcher, his experience in identification of different behavioural patterns, and his judgement as to the distinctions which would prove most useful in analysis, all combined in producing the final scale.

Two examples of judgement socio-economic scales are presented:

- The Registrar General's scale, alluded to above, has since been expanded into 16 socio-economic groupings.

  These groupings encompass both occupational classifications and employment status. In this case, employment status categorizes self-employed people and also captures data on the size of establishment. The scale has been commonly used in the U.K. since much of the published data is broken out on this basis. Many researchers developing different kinds of scale, for example, Goldthorpe (Goldthorpe, 1974) and Hall/Jones (Hall, 1950) attempted to ensure that their scales could be collapsed and matched to the Registrar General's scale for comparison with published statistics.

- Hollingshead produced a scale in 1957 (Hollingshead, 1957) called the Two Factor Index of Social Position. This index utilized two measures, occupation and education. In fact, Hollingshead's occupation categories (shown in Table 10), somewhat like the Registrar General's scale, also take account of the size of the business within which the respondent works. The two elements of the scale are then weighted (education with a factor of four and occupation by a factor of seven) and summed for a total score with a theoretical range of 11 to 77. This range is then unevenly divided into five classes. The

Table 10

HOLLINGSHEAD'S TWO FACTOR INDEX OF SOCIAL POSITION

Occupation Groupings

1. Higher executives, proprietors of large concerns, and major professionals.
2. Business managers, proprietors of medium-sized businesses, and lesser professionals.
3. Administrative personnel, small independent businesses, and minor professionals.
4. Clerical and sales workers, technicians, and owners of little businesses.
5. Skilled manual employees.
6. Machine operators and semi-skilled employees.
7. Unskilled employees.

Education Groupings

1. Less than seven years schooling.
2. Junior high school.
3. Partial high school.
4. High school graduate.
5. Partial college.
6. College graduate.
7. Graduate professional training.

Source: Hollingshead, 1957.

classes have unequal sizes and there is little empirical support for the divisions, although in a later study, Hollingshead demonstrated that the divisions appeared to be useful in research practice.

The major supporting argument for judgement socio-economic status scales is that the scales have face validity as measures of socio-economic status. By combining both occupation and employment status information, the Registrar General's scale and Hollingshead's occupation scale produce groupings which would seem to capture at least the common perception of socio-economic status.

On the other side of the coin, however, the scales are criticized primarily because of the lack of objective validity. Since the groupings are formed primarily on a subjective basis, readers of research reports based on such scales can, and often do, take issue with the groupings used and possibly therefore reduce the impact of the results shown. This criticism is perhaps of critical concern in this particular study.

Before turning to an evaluation of these seven scales on our criteria, we will briefly review the kinds of socio-economic status indicators used in education research and the collection of education statistics. We do this to provide a basis for the comparisons which socio-economic status information collected in Ontario would have to be made with.

D. SOCIO-ECONOMIC STATUS INDICATORS USED IN EDUCATION

It is worthwhile to briefly examine the kinds of socio-economic status indicators that are used in education. We will look at their use in two specific activities:

- education research, particularly conducted in post-secondary education in Ontario or in Canada;
- socio-economic status statistics collected by education authorities.

In recent years, a number of studies have been conducted which have examined to a greater or lesser extent, the issue of equality of opportunity of education in Ontario or in Canada in general. Since it is in order to address issues surrounding this topic that the Ministry

Table 11

S.E.S. INDICATORS USED IN RECENT CANADIAN EDUCATION STUDIES

Study	Date	Socio-Economic Indicators
Secretary of State (Dept. of Secretary of State, 1976)	1976	Education Income (Occupation collected but not used)
Does Money Matter? (Porter, 1971)	1971	Blishen
Student Aid and Access to Higher Education in Ontario (Clark, 1969)	1969	Index created for study based on: ▶ farm or not ▶ number of tractors ▶ inside bathroom ▶ employment status ▶ father's occupation ▶ income ▶ mother's occupation ▶ self-rated social class ▶ type of house ▶ type of vacation ▶ family finances
Survey of Ontario Post-Secondary Student Finances, 1967/68 (Watson, 1972)	1967/68	Father's occupation (judgment grouping)

requires to set up socio-economic status data collection, it is worthwhile examining the kinds of indicators which have been used in some of these studies.

Four studies have been used and quoted fairly widely in discussion of the issue. Basic data on these studies are shown in Table 11. The indicators used by the study authors to measure socio-economic status are also shown.

It is immediately apparent that there is little common ground in the use of socio-economic status indicators. The Secretary of State study collected information on education income and occupation of students' parents. However, they used only father's education and income in the analysis of socio-economic characteristics. No attempt was made to utilize any of the known and tested socio-economic scales.

The Does Money Matter study by Porter, Blishen and Porter utilized the Blishen scale as a socio-economic indicator. Since two of the authors of this study have been instrumental in the development of socio-economic scales, this is not surprising! The student aid project utilized a socio-economic index based on a vast array of variables. While all of the variables used have been shown at some time to be related to socio-economic status, the actual construction of the index was not supported by any previous research. It cannot, therefore, by compared with any other studies.

The final study, Survey of Ontario Post Secondary Student Finances, 1967/68 (Watson, 1972), utilized a fairly standard grouping of father's occupation data as a socio-economic indicator.

These studies are typical of studies that have been conducted in Canada on education issues. The researchers have, with a few notable exceptions, utilized any variable which seemed to be appropriate and called it socio-economic status. The only possibility for using any statistics the Ministry might collect with such approaches would be to collect the data at a highly disaggregated level. Later, the data could be grouped however necessary for specific analysis.

For example, if the Ministry had collected a detailed occupational data on students fathers, this could have been grouped in various ways to match at least the occupation data collected within the four studies shown. This at least would give some point for comparison, even if the profiles are not directly comparable.

Table 12 shows a sampling of the socio-economic status groupings used by the educational statistical agencies of five countries around the world. These are but a sampling of the groupings used by some 20 countries which are shown in Appendix B to this report.

A number of notable points emerge from our analysis of these methods of measuring socio-economic status. The key ones are:

- the basis for most groupings is occupation;
- the scales are all judgemental in nature;
- there is virtually no standardization of terminology or grouping;
- many use the self-employed/employee dichotomy to refine the groupings;
- there is a tendency to break out educational occupations as well as details of educational background.

This last point is interesting since it suggests that the scales have been biased somewhat to represent rather more of the educational or cultural aspect than standard socio-economic status scales do. This is perhaps open to some question, since because of the high correlation between the educational levels of parents and children, these scales will almost automatically show correlations with participation in education.

E. EVALUATION OF SOCIO-ECONOMIC STATUS SCALES

We now turn back to evaluate the socio-economic status scales described in Section C. In Table 13, we summarize this evaluation. The criteria are those described in Section B above. The evaluation is based on our judgement combined with a review of the critiques of the various scales.

The evaluations use a four point scale; excellent, good, fair and poor. These ratings are necessarily judgemental. In the following sections we explain the basis for our ratings under four headings, validity, reliability, scaleability and comparability.

1. Validity

We have assessed the validity of the scales in terms of how well they appear to measure the three dimensions of socio-economic status which are important in this study, namely, economic class, status, and culture.

Table 12

SOCIO-ECONOMIC STATUS GROUPINGS USED IN PUBLISHED EDUCATION STATISTICS - SELECTED COUNTRIES

Austria	Netherlands	Sweden	United States	Germany
I Self-employed 1. Professional 2. Agriculture 3. Others II Employees 4. Higher level 5. Others III Workers IV Retired, etc.	▶ Professions ▶ Teachers (sec. and higher) ▶ Higher level employees ▶ Middle level employees ▶ Primary teachers ▶ Self-employed in agriculture ▶ Other self-employed ▶ Low-level employees	▶ Farmers, self-employed ▶ Primary teachers ▶ Univ. grads and officers ▶ Directors, wholesalers ▶ Tradesmen, merchants, artisans ▶ High-level employees and professions ▶ Other employees ▶ Workers ▶ Other	▶ Professional ▶ Proprietors, managers, senior executives ▶ Clerical and sales ▶ Service workers ▶ Skilled workers ▶ Semi-skilled ▶ Unskilled ▶ Farmers, farm labourers	▶ Civil servants - univ. grads - others ▶ Employees - univ. grads - others ▶ Self-employed ▶ Workers ▶ Others

The three prestige scales (Pineo, NORC, and Treiman) are felt to be excellent measures of the status dimension of socio-economic status. This is of course because status is what prestige surveys essentially measure. Since none of these scales contain obvious variables to measure economic class and culture, they represent these dimensions only marginally.

The two socio-economic indices (Blishen and Duncan) are felt to represent a good all-round mix of the three dimensions. We base this on the fact that the criterion variable in the development of these scales is prestige and therefore, the scales can be said to represent status. However, the two predictive variables, income and education, are felt to represent economic class and culture respectively.

The two factors in the Hollingshead scale, occupation and education, relate fairly strongly to the economic class and cultural dimensions. Status is represented in this scale only marginally.

Finally, the Registrar General's scale is primarily an economic one. While it claims to capture groupings of people with similar cultural backgrounds, there is little to substantiate this.

2. Reliability

In terms of reliability, the Pineo, Porter and NORC scales are felt to be slightly less than optimal in this respect. This is based primarily on the fact that the scale uses relatively broad occupational groupings. The fitting of specific occupational titles into these groupings gives some ground for variation which tends to lower the reliability of the scale. These scales are therefore rated "Good" on reliability.

The Treiman, Blishen, Duncan and the Registrar General's scales all provide scale values for all of the detailed occupation codes. They therefore are as reliable (i.e. consistent) as the census codes. They are not subject to the vagaries of interpretation which are common with trade organizations. This is in contrast with the Hollingshead scale with its highly aggregated and somewhat judgemental occupational

Table 13

EVALUATION OF S.E.S. SCALES

Criteria	Pineo/ Porter	NORC	Treiman	Blishen	Duncan	Hollingshead	Registrar General
Validity, as a measure of:							
▸ economic class	Fair	Fair	Fair	Good	Good	Good	Good
▸ status	Excellent	Excellent	Excellent	Good	Good	Fair	Fair
▸ culture	Fair	Fair	Fair	Good	Good	Good	Fair
Reliability	Good	Good	Excellent	Excellent	Excellent	Fair	Good
Scaleability:							
▸ unique scaling	Good	Good	Good	Excellent	Excellent	Good	Excellent
▸ categories	Good	Good	Fair	Fair	Fair	Good	Good
Comparability to:							
▸ Canadian Census	Good	Fair	Good	Excellent	Fair	Poor	Fair
▸ Canadian Education Research	Fair	Fair	Fair	Good	Fair	Poor	Fair
▸ Canadian Social Research	Excellent	Good	Good	Excellent	Good	Good	Good
Overall Score	17	15	16	21	17	12	15

Excellent = 3
Good = 2
Fair = 1
Poor = 0

codings. Hollingshead is rated only fair in this respect because of the possibility that people with educational occupations could be coded into different groups.

3. Scaleability

In terms of scaleability, the uniqueness of the scaling corresponds closely to the reliability measures noted above. Again, the Blishen, Duncan and Registrar General's scales perform well in this regard.

In each of these scales most occupations have been given a specific scale value. This means that the scale will position an individual uniquely at one point on the scale.

We have rated the Treiman scale slightly lower (good) because there is some room for slight definitional differences between the occupational codes of a specific country, in particular Canada, and the international codes used in his scale.

The more aggregated scalings of Pineo/Porter, NORC and Hollingshead do not score the highest point on scaleability because of the potential for ambiguous positioning of some occupations in their groupings.

In terms of the scale categories, the Treiman, Blishen and Duncan scales can be criticized because of the somewhat arbitrary nature of the category definitions. All of them use cutoff points defined on the metric value of the scale. As we noted earlier, this can lead to some difficult-to-understand splits of occupations.

4. Comparability

We have rated the scales on the comparability of the results with three sources, namely:

- the Canadian census;
- Canadian education research;
- Canadian social research.

In many ways, the key comparison is with census data. This provides the basic norm against which all statistics of this sort should be evaluated. Clearly, the two Canadian scales (Pineo, Porter and Blishen) perform better on this criterion

since they are based to some extent on census data. In particular, the Blishen scale closely matches the Canadian census in that scale values are assigned for all of the unit groups used in the census. The Pineo/Porter scale performs less well in this regard because of the aggregated groupings used in this scale.

The Treiman scale is also felt to be a relatively good fit to the Canadian data because the international occupation codes it uses are very similar to the occupation codes used in the Canadian census.

The remaining scales are rated mostly "Fair" on comparability because they are based on non-Canadian sources. The scales are also used very rarely in Canadian research thereby making comparisons difficult.

5. Overall Evaluation

Finally we have attempted to combine these evaluations into an overall rating. In Table 13, we have computed an overall score numerically giving scores of 3, 2, 1 and 0 for the four word ratings. Although this approach is subjective, it does indicate what a careful examination of the detailed ratings suggests -- that the Blishen scale is the best all-round scale for Ministry needs.

Three characteristics of the Blishen scale lead to its superiority, namely:

- By its method of construction the scale combines all the dimensions (economic, status, cultural) of SES which we would want in a scale.

- Because the scale provides scale values for all the detailed Canadian Census codes it is both reliable and comparable to Canadian statistics.

- The scale has been widely used in Canadian social research and to some extent in education research.

The main shortcoming of the scale seems to be the somewhat arbitrary nature of its groupings. A group defined as "all people with scores of over 70" is not as easy to understand

as one defined as "all professionals and senior managers". However, it is possible to describe the groups by the most common occupations in them so that to some extent this objection can be overcome.

A final point is worth making. To construct the Blishen scale, data on occupations should be obtained at a fairly detailed census code level. If the Ministry were to collect these data and store them in a detailed coded form considerable flexibility would be possible. Reports would generally be produced using the Blishen groupings. But, for special purposes, perhaps to compare to another study, the codes could be grouped differently. Thus the use of the Blishen scale for SES does not lock the Ministry in to just one method of analysis.

IV

DATA COLLECTION APPROACHES

In this chapter we look at various alternative methods of collecting the data required for the socio-economic measures described in the previous chapter. Although occupation is probably the most important piece of data to be collected, we look first at the data collection needs for income and education as well. We then briefly describe the alternates. We analyze how each approach would work including the resources required. Finally, we examine the advantages and disadvantages of each approach.

A. DATA REQUIREMENTS FOR SES MEASURES

In this section we describe the data which are needed to quantify properly the SES measures described in Chapter III. While the analysis in Chapter III concluded that occupation is the key variable for measuring SES, for some data collection approaches the incremental cost of collecting other SES data is minimal. Accordingly, we describe the data elements which are needed for income and education in addition to occupation.

After looking at the ideal data requirements, we also examine the practical comparisons which must be made given the type of data collection.

1. Ideal Data Elements Required

Although occupation, education and income are discussed as single variables, they all, to a greater or lesser extent, require multiple data elements to be collected. These multiple elements are needed to position unambiguously a respondent on the measure.

Occupation is the measure for which multiple data elements are most useful. Simply asking "What is your occupation" can produce responses which are highly ambiguous. Further information is needed both to identify the type of work and the level of responsibility involved. This latter factor is,

of course, very important when looking at SES. Specifically, the following data elements represent an "ideal" set for occupation measures:

- Type of work - Both job title and description;
- Type of company - Both industry and company size are useful here. In the census the actual name of the company is collected to facilitate cross-checking.
- Employment Status - That is, self-employed, owner of enterprise, employed, or other.
- Level of supervision.

While these data requirements may seem excessive, it should be noted that virtually all of them are collected on the Census form in order to code adequately the occupations. Since these same occupation codes are used in the SES scales, there are good reasons for trying to collect as many of these elements as possible.

The other two variables, income and education, do not require as much additional information as occupation. For income the following elements are useful:

- Total household income;
- Income of chief wage earner;
- Incomes of other household members;
- Size and make-up of household;
- Income other than employment income (mainly asset income).

For education the "ideal" data elements are:

- Years of schooling;
- Last level completed. Both the level and the type of schooling are important;

- Location of schooling -- other provinces, countries, etc.

2. Impact of Data Collection Approach

The kind of data collection approach used necessarily impacts the range and quality of data elements which can be collected. Two characteristics of the data collection approach are important here. First, are the data collected via a self-administered instrument or is an interviewer available? Second, are the data collected as part of a survey questionnaire, or are the data collected through a form such as a registration form?

The key implications of the self-administered versus the interviewer-administered approach are as follows:

- The questions must be self explanatory. Questions which the student may not be sure how to answer cannot be used on the self-administered approach.

- "Open-ended" questions, or probing questions, are not really feasible.

In practice, these limitations impact occupation more than the other two variables. Most practitioners feel that the only reasonable way to collect occupation data from self-administered questionnaires is to use pregrouped answer categories aided by examples to the occupations included in them.

Collection of the information on a form, generally as part of a registration or admissions process, imposes even more limitations. Most forms are limited in terms of the space which can be devoted to a single data element. Generally, the question itself must be short, and there is rarely room to include qualifying explanations.

Overall, the self-administered form places the greatest restrictions on data collection. For occupation data in particular, these restrictions seriously degrade the value of the information collected. At the other extreme, an interviewer-administered questionnaire offers the greatest flexibility. In this situation, the data collected can approach the ideals described above.

B. ALTERNATIVE DATA COLLECTION APPROACHES

We have identified three general approaches to collecting these data. These approaches are:

- existing information systems;
- sample surveys;
- secondary sources.

The first approach would utilize some modification of existing data collection systems associated with the USIS, OCIS and OSAP systems. Under this scheme the institutions would collect the data, code it and add it as a new data element to the tape submitted to the Ministry. Analysis would then be accomplished with the current facilities associated with each of these systems.

Under the sample survey approach, the relevant sub-groups would be sampled, probably from existing files. The sampled individuals would then be surveyed by mail, personal interview or in-class handout. The interviews would obtain the information needed to code the socio-economic status. The coded data would be tabulated and analyzed separately from the current information system.

The secondary source approach would attempt to identify existing data banks which could provide socio-economic status data on students. Currently, we have been able to identify only one source which shows some promise in this respect -- Statistics Canada's Labour Force Survey. It is possible to obtain from this survey socio-economic profiles of certain sub-groups of Ontario post-secondary students along with some relevant comparison groups.

C. THE EXISTING INFORMATION SYSTEMS

Currently, there are three systems within the Ministry which capture and analyze data on students. These are:

- USIS
- OCIS
- OSAP

The USIS system collects and stores data on all students currently registered in a program of study at an Ontario university. The data is captured by the institutions, primarily at registration time. It is coded and submitted to the Ministry on a tape.

The OCIS system operates in a similar fashion but includes only full-time students. OSAP covers all students receiving financial aid. In this case, the information is collected on the application forms in considerable detail. The data is used primarily to determine the eligibility of the student for aid. Selected items are extracted and used as part of a statistical reporting system.

Currently, none of these systems collect the data on father's occupation which would be needed for socio-economic scaling. The OCIS system does have father's education as a data element. (As we understand it, this item was initially added to the system to fulfill the kind of role now envisaged for socio-economic status.) To collect occupation data would, therefore, require a new data element on all the systems.

This would require the cooperation of the institutions. They have the responsibility to collect information for the various systems. The information being collected is in many ways a compromise between that desired by the Ministry and what the institutions are willing to collect and in which they can see some value. They would, therefore, have to be persuaded that the effort of collecting socio-economic status data is worthwhile.

Our impression is that this will not be an easy task. The institutions are already concerned about the amount of information they now have to collect. Public pressure is growing to curtail the data collection activities of governments at all levels. Many would question this additional probing of information from the student. This is especially true in light of the reservations presented earlier on the value of this information on its own.

Should these obstacles be overcome, the task will be to reach agreement with the institutions on a uniform method of collecting and coding the information. This would most probably be achieved by the use of a separated personal information form filled out by the students at registration.

The resource cost to the Ministry of this approach is for all practical purposes negligible. Since the machinery is already in place to collect, store and analyze the data, the addition of one more data element would be insignificant. There would be some expenditure of time by Ministry staff when first setting up the new element but even this is likely to be fairly small.

The cost impact on the institutions may be slightly greater since they have to incur additional work in collecting, coding and (hopefully) editing the data collected. However, the probability is that they would use existing resources for this work. The incremental costs will therefore be very low.

D. SPECIAL SURVEYS

One way to estimate the socio-economic profile of a particular sub-group of students (or a comparison group of non-students) is to select a representative sample and survey them. This approach is potentially extremely flexible in that the sample can be structured to reflect the information needs of the Ministry. It also offers the possibility that additional background data could be collected from the students as part of the survey.

The initial task would be to develop suitable sampling frames for the populations of interest. Table 14 shows the sample frames which could be used for each of the sub-groups of major interest. Current students can be sampled relatively easily. However, the OCIS file does not cover part-time students. This would necessitate some ad hoc solution such as convenience lists from the institutions or in-class handouts (as used in the current part-time students' questionnaire).

Grade 12 and 13 students represent a major problem. There is no convenient sampling frame for grade 12. Direct sampling via the schools is likely to meet with opposition from the schools. This is also true for grade 13 students since we would have to obtain names and addresses from the schools.

There are four methods of surveying the students, namely:

- in-class handout;
- mail direct to the student;
- telephone interview;
- face-to-face interview.

The first alternative does not require sample frames of the sort described above. Rather, a sample of classes in each institution would be selected. Questionnaires would be handed to all attendees at these classes and collected at the end.

Table 14

SAMPLE FRAMES FOR VARIOUS SUB-GROUPS

Sub-Group	Sample Frame
University students	USIS files. Names and addresses would have to be obtained directly from the universities and added to the forms.
CAAT students	OCIS files. Again, names and addresses would have to be added. In addition, the colleges would have to be asked to identify samples of part-time students.
Apprentices	Files used for tracking apprentices progress.
Grade 13's	Cross-file used for university applications. No names and addresses.
Grade 12's	Secondary school system. There is no file of grade 12 students. They could only be sampled by first selecting a sample of schools and then selecting grade 12's within those schools.

Of the three remaining methods, only the mail and telephone approaches can be seriously considered. Face-to-face interviews, using trained interviewers, would be prohibitively expensive. This is especially true if the sample is geographically dispersed.

The costs of this approach would depend on who did the work. If, for example, a total sample size of 2,000 students was obtained, the costs of collecting, coding and keypunching the data using a private firm would be approximately:

- mail - $15,000;
- telephone - $25,000.

This would be the annual cost. In addition, there would be startup costs associated with designing questionnaires, sample frames, etc.

One possiblity which does exist with the survey approach is that of expanding the scope of the survey. The needs survey identified a number of issues which relate in a general way to the need for SES data. It would be possible to design a survey questionnaire which collected data not only on SES but also on variables relevant to these issues.

Such a survey would provide a useful bank of background information relevant to these issues. By repeating the survey on a regular basis, trend data would be available.

E. SECONDARY SOURCES

We have also looked at existing sources of socio-economic data on students which could satisfy your needs. The Labour Force Survey is one candidate.

This survey covers approximately 11,000 Ontario households every six months, and collects detailed occupational data. It also collects educational status data on all residents of the household 15 years of age and over. It therefore offers the possibility of obtaining socio-economic profiles of sub-groups of interest.

The approach would be as follows:

- In each sampled household, take all individuals who fall into a sub-group of interest, for example, full-time university students.

- Link each selected individual with the occupational data of the head of the household.

- Classify the individual into a socio-economic group on the basis of the occupational data.

- Compute profiles for each sub-group.

This possibility has been explored in depth with Statistics Canada. They have indicated that, with suitable programming, this analysis could be performed. They would, however, impose strict limits on the statistical reliability of the data. This means that they would not want to provide data for some sub-groups even though there is a reasonable (in our view) sample in that cell.

Table 15 shows the key sub-group which could be obtained from the survey and the relative sizes in each. These sub-groups are the ones which represent the input transitions described earlier in this report. As such, they can provide information on the major issues with regard to equality of opportunity.

According to Statistics Canada, the initial costs for a developing program to do this analysis would be of the order of $15,000. Once the programs are developed, annual runs could be obtained for approximately $1,000 per year.

F. ADVANTAGES AND DISADVANTAGES OF THE THREE APPROACHES

In this section we will enumerate the advantages and disadvantages of the three approaches. This will set the stage for the next chapter containing our conclusions on the best course of action for the Ministry.

1. Information Systems

The major advantages of the information systems approach are:

Table 15

LABOUR FORCE SURVEY REPRESENTATION
OF SUB-GROUPS OF INTEREST

Sub-Group	Projected Ontario Population[1] (Thousands)	Estimated Sample Base[2]
Full-time university	152	1,010
Full-time CAAT	76	510
Part-time university	66	440
Part-time CAAT	43	290
Grade 13	86	570
Grade 12	131	870
Not Attending (aged 15-24)		
Grade 13	234	1,560
Grade 12	54	360

[1] November 1977 survey.

[2] This is approximate only. It is based on a sampling ratio of 1:300 and assumes we merge two waves, i.e. 12 months data.

- A large base. Since most students are in the system, the data can be broken down as finely as required.

- Cross-analysis. The existence of other data on the system allows policy-makers to cross-analyze socio-economic data with other background and academic measures.

- Longitudinal. By tracking students as they progress through the system it would be possible to identify longitudinal effects of socio-economic status.

- Current. The data on the current student population.

- Semi-automatic. Once set-up, the system will proceed with little further involvement.

- Low cost. The expenditure of resources required is low.

The key disadvantages are:

- Coverage. The system does not cover comparison groups outside the student population. There are also gaps in the coverage of students.

- Institution resistance. Institutions are likely to resist strongly additions to the system. There is little strong evidence to persuade them that it is worth it.

- Measurement limitations. It would not be possible to ask the type of in-depth questions which are required to accurately code occupation in this system.

- Variable data. Since institutions will collect their own data, there is likely to be considerable variation in both the methods used to obtain it and in the degree of care with which it is obtained.

2. Special Surveys

The evaluation of the survey approach depends, to some extent, on the method used. In the following discussion, specific exceptions in terms of method are noted. Where no exceptions are noted, the comments apply equally to all approaches.

The major advantages of the survey approach are:

- Better control of data collection. The questions used and the eventual coding and analysis of the results are more fully in the Ministry's control. This eliminates the variability of response associated with institutional collection of the data.

- More in-depth probing. The survey can collect more information than just one simple occupation question. In fact, since a single questionnaire would look rather odd, it would be better to include more questions. This means first that the occupation question can be amplified along the lines of specific questions. Second, other socio-economic data perhaps including attitudinal data can be collected, thereby adding to the richness of the information presented.

- More accurate occupational data. There is agreement among researchers that the ideal way to collect occupation data is by personal interview. A well-trained interviewer can probe for details that make the problem of coding occupations unambiguously much easier. This implies that the telephone interview approach will provide better data. The mail and handout approaches do not have this advantage although the ability to ask multiple questions does enhance the data collected by these approaches.

- Cross-analysis. By linking the survey forms with the information system, the socio-economic status data can be cross-analyzed by other background and academic variables. This could be achieved simply for the approaches using the information systems to generate a sampling frame. It is more difficult in the case of an in-class handout. In this case, the information required for cross-analysis could be requested as part of the questionnaire.

The major disadvantages are:

- Cost. Apart from the in-class handout approach, this approach is the most costly alternative.

- Institutional and student resistance. There is growing resistance to over-surveying of people, and students are probably more surveyed than others. It may prove difficult to convince the institutions and the students that this is a worthwhile survey.

- Limited cell sizes. Unless extremely large (and costly) samples are used, the cell sizes for various breakdowns within the total sample are likely to be small. This would limit the usefulness of the information.

- Coverage of comparison groups. It is extremely unlikely that we would be able to survey high school students on an ongoing basis for this purpose. This eliminates a key comparison for evaluating the data.

- Reliability. Because this is a sample approach, the reliability of the data is limited. This is especially true if high levels of non-response are encountered as is likely to happen with the in-class handout approach.

3. Labour Force Survey

The major advantages of this approach are:

- Coverage. The survey provides coverage of both students inside the system and relevant comparison groups outside the system. This is a critical advantage which none of the other approaches has.

- Low cost. Once the initial programming is completed, running costs will be negligible.

- No additional data required. The institutions and the students do not have to be asked for more information.

- Good occupation data. The occupation data on the survey is currently coded very carefully into the Statistics Canada codes.

The major disadvantage to this approach is that Statistics Canada now feels that a large proportion of the post-secondary students in their sample cannot be linked to their head of household and thereby the occupation data. In their opinion, this invalidates the approach.

V

CONCLUSIONS AND RECOMMENDATIONS

This chapter draws the various threads of the study together, draws conclusions and makes recommendations. In it, we first draw conclusions on the needs within the Ministry for socio-economic status data. Our conclusions on the best measure to use are then presented. Next, the alternative ways of collecting these data are examined and conclusions drawn. Finally, we present our recommendations on the best course of action for the Ministry.

A. THE NEEDS FOR SOCIO-ECONOMIC STATUS DATA

From our survey of needs within the Ministry, the following conclusions can be drawn:

- There are many needs relating to specific issues stemming from the equality of opportunity doctrine.
- Simply collecting socio-economic status profiles of students will do little to satisfy these needs directly.
- Obtaining socio-economic status profiles on both sides of key transitions, especially input transitions, will provide more understanding of the magnitude of the problem. For example, comparing high school students with college and university students would provide valuable insights.
- The real answers can only be obtained through more in-depth research aimed at examining the complex interaction of socio-economic status and other variables.

We were also able to identify some criteria which an ideal data collection approach for these data should meet. These criteria are:

- Coverage. The data should be available for the key sub-groups detailed in Chapter II. It is only by cross-analyzing these data that useful conclusions can be drawn by the policy-makers.

- Comparability. As far as possible, the data collected should be broadly comparable to that collected in other studies of the equality of education issue. This will increase the utility of the data.

- Acceptability. The measure used should be broadly acceptable as a valid measure of socio-economic status. As far as possible, you want to avoid debates on whether the data collected is valid.

- Expense. The method used should not utilize excessive amounts of resources. The relatively low value of the information for its own sake indicates this.

The major conclusion we would draw here is that the need for socio-economic status data for its own sake is marginal. The data are only useful if they can be analyzed with many other variables to lead to some conclusions (albeit tentative) on the causal effects of social class. This objective is best met by a research study or, more likely, a series of research studies aimed at specific issues. By collecting socio-economic status data across key transitions in the system, we can get slightly closer to this objective but still leave many questions open.

B. MEASURES OF SOCIO-ECONOMIC STATUS

After reviewing considerable academic literature and also discussing the issue with many practicing social scientists, the conclusions here are fairly clear:

- There is no clear definition of socio-economic status, independent of the measures used to measure it. This means that we cannot use an objective criteria for judging what is the absolute "best" measure. All measures, in a sense, define socio-economic status to be what they measure. As such, they are all perfect measures.

- The overwhelming proportion of social and education research uses measures based primarily on occupation.

- There are two Canadian measures which have achieved a degree of acceptance in the research community and which are methodologically similar to measures used in other parts of the world. These are the Blishen and the Pineo-Porter

scales. Both scales require that the same data be collected -- occupation data preferably coded to match Statistics Canada codes. Because both scales can be derived from the same input, there is some flexibility available in the final groupings used for a specific analysis.

- Where feasible, under the data collection approach, the collection of income and education data could be considered.

C. DATA COLLECTION ALTERNATIVES

The conclusions with respect to data collection alternatives are, unfortunately, not as clear as the measures issue described above. There is no clearly "best" solution. None of the alternatives available come close to meeting the criteria described in the needs section. All approaches have severe limitations from either a methodological viewpoint, a practical viewpoint or from both.

We have identified three alternatives:

- use of secondary sources;
- existing information systems;
- special surveys.

We will evaluate each of these in turn.

In many ways, the use of secondary source data would be ideal. It is cheap and can be obtained without further disturbing the institutions or the students. Unfortunately, only the Labour Force Survey appears remotely relevant to the Ministry's needs. This source suffers from major methodological problems. A large proportion of the students cannot be linked to the occupation of their head of household. Since this is how we had proposed to obtain the socio-economic status data on students, this problem is sufficient to invalidate the approach.

The use of existing information systems has much to commend it. It allows for detailed matching with other data on the files. The system is already set up and so the means of analysis are readily available.

The approach, however, suffers from three major drawbacks:

- It provides no coverage of relevant comparison groups, it only gives data for students.

- Without good justification, the institutions are unlikely to be willing to try to get the data.

- The data are likely to be unreliable because of variations in collection approaches by the institutions and the limitations in how the questions can be asked.

The first criticism means that the data would be of only marginal value. Recall that the most useful data would be that which could be compared across transitions. This cannot be done under this approach. Given the marginal value of the information, it is doubtful if the institutions could be persuaded to collect it. And, it is doubtful if the Ministry should even attempt persuasion, especially given the questionable quality of the data collected.

There are two basic approaches to the special surveys alternative. The prefered approach from a methodological point of view is the use of a personally administered questionnaire (via the telephone). This would use a carefully designed probability sample and a structured questionnaire. With suitable controls, the quality of a data collected would be excellent.

It does have some problems, however, namely:

- high cost;
- limited sample sizes;
- lack of comparable sub-groups;
- resistance from students and institutions (and the general public) to over-surveying.

The high costs of this approach coupled with the relatively low value of the information collected suggest that it is not feasible.

A second approach to the survey would be the use of an in-class handout. This has a number of advantages over the telephone approach, namely:

- much lower cost;
- does not require a complex sample frame;
- sample sizes can be much larger.

But it still has drawbacks. The lack of comparison groups and the resistance to oversurveying are still valid criticisms. In addition, it has significant methodological limitations. It is likely to suffer from low response rates, poor control and unreliable measures because of the self-administered nature. In other words, this approach gives more data for less cost but at the expense of the quality of data obtained.

D. RECOMMENDATIONS

In the light of the above conclusions, we recommend the following to the Ministry:

- The best measure of SES for the Ministry is a grouping of father's occupation based on the Blishen scale;
- The addition of an SES data element to the existing information systems is not recommended at this point;
- A special survey (or series of surveys) purely to collect SES data on students is not recommended;
- It is recommended that the Ministry consider setting up a regular survey of incoming students. This survey would contain questions relevant to a number of the policy issues discussed in this report. SES information would be included as part of this survey.

In addition, the Information Resources Branch should be asked to examine studies under consideration (or planned) in other areas to identify potential economies to be gained by collecting all or some of this information as part of the regular survey.

APPENDIX A

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APPENDIX B

SOCIO-ECONOMIC STATUS MEASURES USED IN EDUCATION IN OECD COUNTRIES

STUDENTS	LABOUR FORCE
Belgium (continued)	
4. Other employees	
Qualified clerical workers	Administrative personnel
5. Traders and artisans	
Traders and industrialists employing 5 to 49 persons Traders and artisans employing less than 5 persons	All non-salaried personnel except professional and farmers
N.B. * Traders and industrialists employing fewer than 50 persons could have been classified under 2 (higher-level employees and industrialists). However, the Belgian education classification puts them in the "Middle class" (those employing more than 50 persons being in the "Upper middle class" and those employing fewer than 5 persons in the "Lower middle class"). Moreover, the Census classification does not permit a distinction of industrialists and traders according to the number of persons they employ. It has therefore seemed preferable to classify them under 5.	
6. Farmers	
Farmer proprietors (more than 12.5 ha. about 1/5 sq. mil). Farmers proprietors (less than 12.5 ha.).	Farmers non-salaried
7. Workers and service personnel	
Skilled workers, foremen Semi-skilled and unskilled workers Non-qualified clerical workers	All employed persons not classified elsewhere
8. Others	
Non-active Undetermined Dead or absent	Non-classifiable
DENMARK	
1. Higher education graduates and primary school teachers	Same classification as for the students (total labour force aged 40-59 years)
2. Civil servants and employees	
3. Self-employed other than farmers	
4. Self-employed farmers	
5. Workers	
6. Others	
FRANCE	
1. Farmers Self-employed Other not salaried	1. Farmers same as for students
2. Industrialists and artisans: Industrialists Tradesmen Artisans (including small shopkeepers)	2. Employers in industry and commerce: Industrialists Tradesmen (wholesale and retail) Artisans Shopkeepers Fishermen proprietors

CLASSIFICATION OF STUDENTS AND LABOUR FORCE BY OCCUPATIONAL CATEGORIES USED IN DETAILED TABLES

STUDENTS	LABOUR FORCE
AUSTRIA	
I. Self-employed	I. Self-employed
1. Professional	1. Professional, technical and managerial workers self-employed
2. Agriculture	2. Agriculture
3. Others	3. Others
II. Employees	II. Employees
4. Higher level	4. Professional, technical workers of high level and administrative, executive and managerial workers other than self-employed
5. Others	5. Clerical and sales workers and other professional and technical workers not self-employed
III. Workers	III. Workers other than self-employed
IV. Retired and undetermined	IV. Non-classifiable
BELGIUM	
1. Professional	
University professors, jurists, stricto sensu professions	University professors professions stricto sensu
2. Higher level employees and industrialists	
Other self-employed high-level professionals	Professional and technical other than professions stricto sensu
High level employees	Industrialists, directors, higher-level administrators
Industrialists and traders employing 50 persons or more	
3. Teaching staff	
Teachers in the upper and lower levels of secondary education and in primary education	Teachers other than in higher education

STUDENTS	LABOUR FORCE
France (continued)	
3. Professions Teachers (secondary and higher education, public and private)	3. Same as for students
4. Higher-level employees (public and private sectors)	4. Higher-level civil servants Higher-level employees
5. Middle-level employees (public and private sector) Primary school teachers	5. Middle-level employees (including technicians) Primary school teachers
6. Other employees: Clerical workers Sales workers Service workers	6. Same as for students
7. Salaried farmers	7. Salaried farmers
8. Workers: Foremen Skilled and semi-skilled workers Unskilled workers	8. Workers: Foremen (public, private) Workers (public, private) Miners Fishermen, seamen Apprentices Labourers
9. Others Without occupation Others Undetermined	9. Not classifiable
GERMANY	
1. Civil servants, university graduates Civil servants, non-university graduates	1. Civil servants
2. Employees, university graduates Employees, non-university graduates	2. Employees
3. Self-employed: professions, farmers, traders, industrialists, artisans (university graduates or not)	3. Self-employed, all types
4. Workers	4. Workers
5. Others, non-actives and undetermined	5. Non-classifiable
GREECE	
1. Professional, technical and related workers	1. Professional, technical and related workers
2. Higher-level employees (public and private)	2. Administrative, executive and managerial workers
3. Middle-level employees, clerical workers (public and private)	3. Clerical workers
4. Traders, sales workers	4. Sales workers
5. Farmers and related workers	5. Farmers and related workers
6. Workers: Miners Transport and communications Industrial Workers n. e. c.	6. Workers: Miners Transports and communications Craftsmen, production-process workers and labourers n. e. c.

STUDENTS	LABOUR FORCE
Greece (continued)	
7. Protective and personal services Armed Forces	7. Service workers Career Armed Forces
8. Others: Non-actives Father dead Non-specified	8. Non-classifiable
IRELAND	
1. Professional, employers, managers, senior employees	Same classification as for students (population aged 20-24)
2. Intermediate non-manual workers	
3. Other non-manual	
4. Farmers self-employed	
5. Skilled manual workers	
6. Semi-skilled and unskilled (incl. agriculture)	
7. Unknown	
ITALY	
1. Industrialists, traders and professions	Same classification as for students
2. Managers, senior executive and employees	
3. Self-employed workers	
4. Salaried workers	
5. Family workers	
6. Unknown and non-actives	
JAPAN	
1. Engineers and technicians Professors and teachers Medical and public health technicians Artists and related workers Other professional workers	1. Professional, technical and related workers
2. Managers and senior executives	2. Administrative, executive and managerial workers
3. Clerical workers	3. Clerical workers
4. Sales workers	4. Sales workers
5. Farmers and related workers	5. Farmers and related workers
6. Workers: Special skilled Others	6. Workers: Miners Transport and communications Craftsmen, production-process workers and labourers Service workers
7. Non-actives	7. Non-classifiable

STUDENTS	LABOUR FORCE
LUXEMBOURG	
1. Professions Teaching staff	1. Professional, technical and related workers
2. Civil servants and higher-level employees	2. Administrative, executive and managerial workers
3. Civil servants and middle-and lower-level employees	3. Clerical workers
4. Farmers self-employed or not	4. Farmers and related workers
5. Artisans and traders	5. 1/3 of self-employed workers and employers (estimate)
6. Workers	6. Workers not elsewhere classified
7. Others and non-actives	7. Non-classifiable
NETHERLANDS	
The Dutch classification of students by social origin gives a very detailed breakdown of occupations included in each socio-economic category. It has thus been possible to reclassify data concerning the labour force along the same lines.	
1. Academic professions: judges, lawyers, accountants and related workers Clergy Physicians, pharmacists and related: Self-employed workers in other professions and related workers	1. Professions stricto sensu and self-employed professional and technical workers
2. Teachers in secondary and higher education	2. Teachers estimated at 1/4 of total teaching staff
Higher-level employees: Administrative and technical personnel of high level Officers and higher-level police personnel	3. Higher-level employees: Salaried persons in professional and technical occupation of high level not included in 1 (of which 1/4 of the category "Other professional and technical personnel of higher- and middle-level"). Administrative personnel of high level Officers (Navy, Air Force, Army) and higher-level personnel of police (estimations)
4. Middle-level employees: Administrative and technical personnel of middle-level Middle-level employees in sports, armed forces and police	4. Middle-level employees: Administrative personnel of middle level Nurses and medicine laboratory assistants 3/4 of the category: "Other professional and technical personnel of higher- and middle-level" Qualified clerical workers 1/4 of "other clerical workers" Qualified sales workers Middle-level personnel in transportation, police and armed forces Photographers and related workers
5. Primary school teachers	5. Primary school teachers: estimated at 3/4 of total teaching staff
6. Self-employed in agriculture	6. Self-employed in agriculture
7. Other self-employed	7. Self-employed workers in commerce, industry, services and sports
8. Low-level employees	8. Low-level employees: 3/4 of category "Other clerical workers" Non-qualified sales workers

STUDENTS	LABOUR FORCE
Netherlands (continued)	
9. Workers in industry and agriculture	9. Workers: salaried workers in industry and agriculture n. e. c.
10. Others: Undetermined	10. Others: Non-classifiable
NORWAY	
Classified according to ISCO	Classified according to ISCO
N. B. Graduates of secondary education in 1946, 1951, 1958 and 1963 have been classified in a different way and compared with the corresponding population aged 19 1/2 years.	
PORTUGAL	
1. Workers, skilled or unskilled	Same classification as for students
2. Industrialists, wholesale and retail traders, farmers' employers	
3. Low-level employees	
4. Urban proprietors	
5. Rural proprietors	
6. Civil servants (all levels)	
7. Professions	
8. Higher - and middle - level employees (private sector)	
9. Secondary school teachers	
10. Primary school teachers	
11. Armed forces (all levels)	
12. Non-specified	
SPAIN (1956 and 1958)	
1. Professional and technical workers	1. Professional and technical workers
2. Directors, administrative personnel, clerical workers, sales workers	2. Administrative, executive and managerial workers, clerical workers, sales workers
3. Self-employed in agriculture	3. Self-employed in agriculture estimated at 2/3 of all self-employed (proportion similar to what is found in other countries with an important agricultural sector)
4. Salaried farmers	4. Farmers excluding the self-employed
5. Artisans and workers	5. All workers n. e. c.
6. Workers in transportation	6. Workers in transportation
7. Service personnel	7. Service personnel
8. Armed forces	8. Armed forces and protective service

STUDENTS	LABOUR FORCE
Spain (continued) (1956 and 1958)	
9. Others Non-actives Dead (excluding the non-specified)	9. Non-classifiable
Spain (continued) 1962	
The Spanish classification of students being based on the occupation or on the status in the occupation, we tried to reclassify the labour force following the same criteria.	
1. Professions and related	1. Professional and technical workers
2. Employers in industry, commerce, transportation and services	2. Employers in the different economic sectors
3. Higher-level employees -Directors	3. Administrative, executive and managerial workers
4. Self-employed in agriculture	4. Self-employed in agriculture estimated at 2/3 of total self-employed workers (see above)
5. Salaried farmers	5. Farmers excluding the self-employed
6. Workers: Skilled and semi-skilled Unskilled and labourers	6. Workers: Miners Workers in transportation Other workers
7. Service workers	7. Service workers
8. Others: Non-actives Father dead Other occupation (excluding the non-specified)	8. Non-classifiable
9. Middle-level employees and sales workers	9. Residual group
SWEDEN	
1. Farmers self-employed 2. Primary school teachers 3. University graduates and officers 4. Directors, wholesalers 5. Tradesmen, merchants, artisans 6. High-level employees and professions (without university degree) 7. Other employees 8. Workers 9. Others: Undetermined Unknown	Same classification as for students (male electors)

STUDENTS	LABOUR FORCE

SWITZERLAND

The data on students, very detailed, have been reclassified to correspond as far as possible to the ISCO classification on which the labour force data are based. Nevertheless some discrepancies still subsist.

1. Professions: include only self-employed workers in professions stricto sensu, teaching staff (all levels) and clergy. (This category is certainly underestimated relatively to the labour force)	1. Professional, technical and related workers
2. Higher-level employees: Directors, commercial and technical personnel of high level Higher-level employees (private sector) Magistrates, judges and higher-level civil servants (This category is certainly overestimated relatively to the labour force for it includes an important number of persons who should be included under 1)	2. Administrative, executive and managerial workers
3. Clerical workers: Other employers (public and private)	3. Clerical workers
4. Sales workers: Self-employed in commerce, bank and insurance Salaried personnel in commerce, bank and insurance	4. Sales workers
5. Farmers self-employed or not	5. Farmers and related workers
6. Workers in transport and communication: Self-employed or not	6. Workers in transport and communications
7. Other workers: Self-employed workers in industry and crafts Self-employed n. e. c. Workers in private industry Workers in private sector n. e. c. Workers in public sector	7. Other workers: Miners Craftsmen, production-process workers and labourers n. e. c.
8. Service workers: Self-employed and salaried workers in hotels (This category is underestimated: it should include certain persons classified under 7)	8. Service workers
9. Others: undetermined	9. Unclassifiable

TURKEY

The classification includes only three big categories

1. Higher class: University teachers, engineers, lawyers, physicians, other professions, industrialists	1. Professional, technical and related workers
2. Middle-class: technicians, civil servants and employees (all levels), self-employed farmers, officers	2. Administrative, executive and managerial workers Clerical workers Sales workers Farmers
3. Lower class: workers, artisans, salaried farmers	3. All workers and service personnel

STUDENTS	LABOUR FORCE
UNITED KINGDOM (England and Wales)	
1. Higher professional	Same classification as for students
2. Managerial and other professional	
3. Clerical	
4. Skilled workers	
5. Semi-skilled and unskilled workers	
UNITED STATES 1955	
1. Professional	Same classification as for students (population aged 18 years)
2. Proprietors, managers and senior executives	
3. Clerical and sales workers	
4. Service workers	
5. Skilled workers	
6. Semi-skilled workers	
7. Unskilled workers	
8. Farmers, farm labourers	
United States 1958	
1. Professional, technical or semi-professional	1. Professional, technical and kindred workers
2. Proprietors Business executives	2. Managers, executives and proprietors, excl. farmers
3. Sales and clerical	3. Clerical and kindred workers Sales workers
4. Farm owners or managers	4. Farmers and farm managers
5. Skilled workers and operatives	5. Craftsmen, foremen and kindred workers Operatives and kindred workers
6. Service or farm workers Labourers	6. Private household workers Service workers excl. private household Farm labourers and foremen Labourers excl. farm
7. No response	
YUGOSLAVIA 1938-57	
1. State employees (office workers, employees, teaching and scientific personnel, health employees, etc.) Professions	Same classification as for students
2. Farmers	
3. Workers and craftsmen	
4. Others	

STUDENTS	LABOUR FORCE
Yugoslavia 1960	
1. Farmers (private and in co-operatives)	1. Farmers
2. Miners	2. Miners
3. Industrial workers and artisans	3. Craftsmen, production-process workers and labourers n. e. c.
4. Workers in transports	4. Workers in transports
5. Sales workers	5. Sales workers
6. Personal and protective services	6. Service workers
7. Higher-level employees and administrative personnel	7. Administrative, executive Managerial workers and clerical workers
8. Professions	8. Professional technical and related workers
9. Others: Non-actives with some income Undetermined and unknown	9. Non-classifiable
Yugoslavia 1965	
Same as for 1960 but in making the distinction between "Higher level employees" and "Other employees" and between "Personnel service" and "Protective service"	ISCO classification